HEALTH BITS & PIECES

By Dan Kenner, Ph.D., LAc

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Health Prevention

Billions of dollars have been spent in the attempt to eradicate polio, but a virulent strain of polio virus produced in the corporate pharmaceutical vaccine distributed in Central Asia and Africa has sown destruction. The United Nations has been forced to admit that a major international polio-vaccine initiative has actually caused outbreaks of polio in Central Asia and Africa in 2019 and 2020. On August 9, 2020, the Federal Ministry of Health, Sudan notified the World Health Organization (WHO) of the detection of a circulating vaccine-derived poliovirus type 2. Neighboring Ethiopia, the Central African Republic, and Chad (along with Republic of the Congo, bordering South Sudan) also reported cases, which increased the risk to Sudan, especially in the Darfur region due to border movements. International health bodies also accidentally reintroduced the disease in Pakistan, Afghanistan, and Iran in 2019. Also, in 2019, the government of Ethiopia ordered the destruction of 57,000 vials of type 2 oral polio vaccine (mOPV2) following a similar outbreak of vaccine-induced polio. There have even been attacks on vaccinators and their bodyguards.

WHO, "Circulating vaccine-derived poliovirus type 2 – Sudan," Disease Outbreak News, *Sep 1, 2020, at https://www.who.int/csr/don/01-september-2020-polio-sudan/en/; OCHA, "Sudan: Vaccine-derived polio outbreak - Flash Update No. 1,"* OCHA, Situation Report, *Aug 13, 2020, at https://reliefweb.int/report/sudan/sudan-vaccine-derived-polio-outbreak-flash-update-no-1; Mbaeyi C, Alleman M, et al., "Update on Vaccine-Derived Poliovirus Outbreaks — Democratic Republic of the Congo and Horn of Africa, 2017–2018,"* CDC, *Mar 8, 2019; 68(9); 225-230, at https://www.cdc.gov/mmwr/volumes/68/wr/mm6809a2.htm; WHO, "Circulating vaccine-derived poliovirus type 2 – Pakistan,"* Disease Outbreak News, *Nov 28, 2019, at https://www.who.int/csr/don/28-november-2019-polio-pakistan/en/.*

Smoke Gets in Your Brain

With the Western United States covered in smoke from recent wildfires, there is great concern about the effects of air pollution on health. Omega-3 fatty acids are crucial for maintaining healthy brain cells, and they are also likely to protect them from the neurodegenerative effects of air pollution. Researchers at Columbia University Irving Medical Center looked at data from the Women's Health Initiative Memory Study-Magnetic Resonance Imaging (WHIMS-MRI), conducted between 1996 and 2006, which included over 1,300 healthy women between the ages of 65 and 80. The subjects agreed to MRI scans of their brains, and answered questions about their lifestyles, diets, and more. The researchers also collected blood samples to measure levels of two important Omega-3 fatty acids, EPA and DHA. Women who were exposed to more air pollution had lost greater amounts of white matter in their brains, as well as brain volume in the hippocampus. The women with a diet rich in seafood – therefore with abundant Omega-3s – suffered no brain tissue loss, even when they were exposed to air pollution.

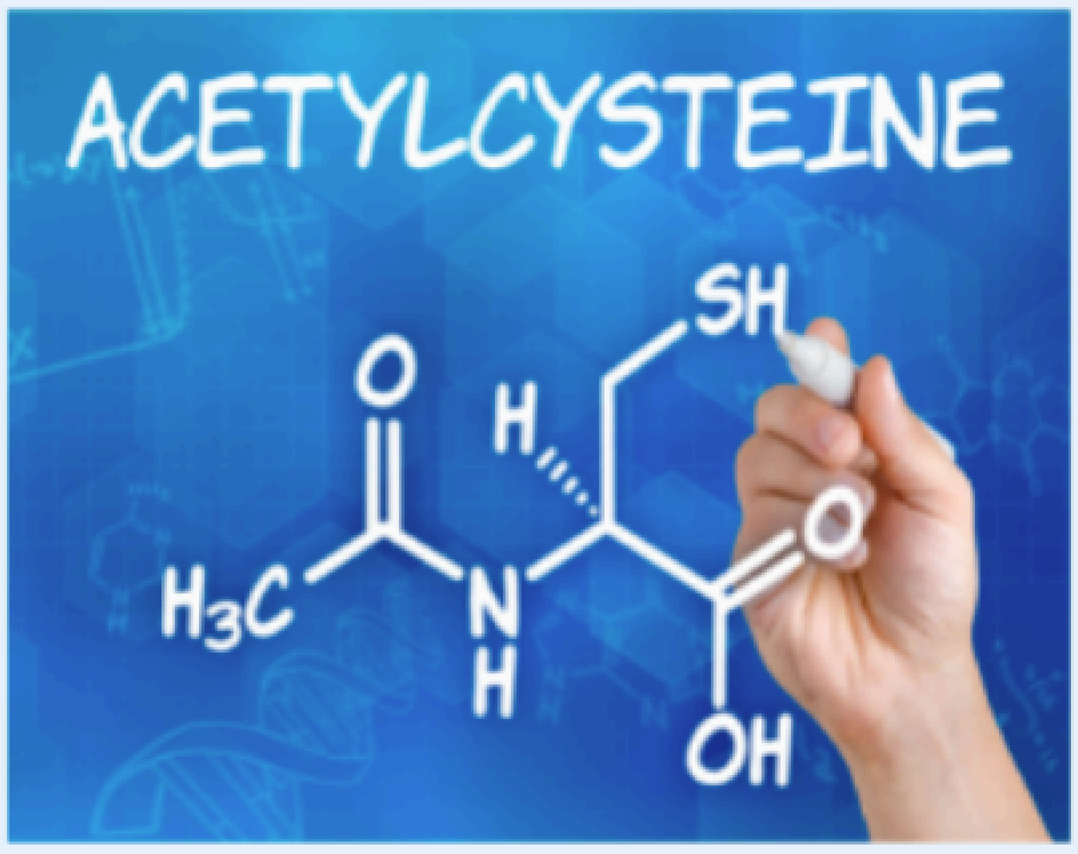
Chen C, Xun P, Kaufman J, et al., "Erythrocyte omega-3 index, ambient fine particle exposure, and brain aging," Neurology *2020; 95(8): e995-e1007; doi:10.1212/wnl.0000000000010074.*

Have You Herd?

Sweden's senior epidemiologist, Dr. Anders Tegnell, told an Italian newspaper, "Sweden has gone from being the country with the most infections in Europe to the safest one." The Scandinavian country now has one of the lowest infection rates in the World despite never having mandated face-mask laws or lockdowns. In the first week of September, the European Centre for Disease Prevention and Control said Sweden's infection rate stood at only 12 cases per million, compared to 18 in Denmark and 14 in Norway. Out of 2,500 randomly selected and tested Swedes, zero tested positive, compared to 0.9 percent who tested positive in April, and 0.3 percent in May.

Karin Tegmark, deputy head of the Public Health Agency of Sweden, said, "We interpret this as meaning there is not currently a widespread infection among people who do not have symptoms." Dr. Tegnell added, "With numbers diminishing very quickly in Sweden, we see no point in wearing a face mask in Sweden, not even on public transport," according to *Fortune.* "What we see now is that the sustainable policy might be slower in getting results, but it will get results eventually," Tegnell said, "and then we also hope that the result will be more stable."

Staff writer, "In Svezia pochi casi di coronavirus «La nostra strategia ha funzionato»," Corriere Della Sera, *September 5, 2020, at https://www.corriere.it/esteri/20_settembre_05/svezia-pochi-casi-coronavirus-la-nostra-strategia-ha-funzionato-5d030394-ef63-11ea-94cc-1f80cc642b17.shtml; ECDC, "Covid-19 pandemic,"* ECDC, *at https://www.ecdc.europa.eu/en/covid-19-pandemic; Daly C & Bloomberg, "'We see no point in wearing a face mask,' Sweden's top virus expert says as he touts the country's improving COVID numbers,"* Fortune, *Jul 29, 2020; at https://fortune.com/2020/07/29/no-point-in-wearing-mask-sweden-covid.*



N-acetylcysteine for COVID-19

The amino acid n-acetylcysteine (NAC) helps the body synthesize and use protective antioxidants, especially the "master antioxidant" glutathione. A randomized, double-blind, clinical trial in 1997 involving 262 participants of both sexes at 20 Italian centers showed that NAC brought about a significant reduction of influenza and influenza-like episodes, especially in elderly, high-risk individuals. More recently, a Russian scientist proposed that deficiency of glutathione is the most likely cause of serious manifestations and death in patients with the novel coronavirus infection, and that NAC could be an effective treatment, especially because it dissolves mucus, prevents blood clot formation, and can potentially prevent a deadly "cytokine storm." In May 2020, the Memorial Sloan Kettering Cancer Center announced a one-year trial involving the intravenous administration of NAC in COVID-19 patients with severe disease. NAC could be a therapeutic agent in the treatment of COVID-19 through a variety of potential mechanisms, including increasing glutathione, improving T cell response, and modulating inflammation.

De Flora S, Grassi C, Carati L, "Attenuation of influenza-like symptomatology and improvement of cell-mediated immunity with long-term N-acetylcysteine treatment," European Respiratory Journal, *1997; 10: 1535-1541; Polonikov A, "Endogenous Deficiency of Glutathione as the Most Likely Cause of Serious Manifestations and Death in COVID-19 Patients,"* ACS Infect. Dis, *May 28, 2020, 6, 7, 1558-1562, at https://doi.org/10.1021/acsinfecdis.0c00288; NIH, "A Study of N-acetylcysteine in Patients With COVID-19 Infection,"* U.S. National Library of Medicine, *May 5, 2020, ClinicalTrials.gov Identifier: NCT04374461, at https://clinicaltrials.gov/ct2/show/NCT04374461.*

Resisting Insulin Resistance

Cardiovascular disease (CVD) is the leading cause of death in the U.S., accounting for one in three deaths. Diabetes is officially the seventh leading cause of death, but deaths from the condition may be underreported, according to the American Diabetes Association. The most significant health disorder, underlying both of these and other conditions, is insulin resistance, according to Robert Lustig, M.D., a member of the Institute for Health Policy Studies at the University of California, San Francisco, and Dr. Aseem Malhotra, Honorary Consultant Cardiologist of Frimley Park Hospital, NHS Foundation Trust, UK. They propose that insulin resistance is the most important predictor of CVD and type 2 diabetes and summarize several studies to explain its significance. One study examined a group of people who were insulin-sensitive, healthy people who require smaller amounts of insulin to lower their blood glucose – the opposite of insulin resistant. After five years, they found that none of the people who remained insulin sensitive developed heart disease, whereas 14 percent of people in the highest 20 percent of insulin resistance developed heart disease in the same period. In another study, up to 69 percent of patients who were hospitalized with acute heart attacks were found to have metabolic syndrome, a diabetes precursor. They also critique blood cholesterol as a risk factor: "There are 44 randomized controlled trials of drug or dietary interventions to lower LDL-C in the primary and secondary prevention literature, which show no benefit on mortality." There is no single test that can directly diagnose insulin resistance, but medical history, physical examination, and blood testing of Hemoglobin A1c, fasting blood glucose, and a lipid panel can indicate a person's level of risk.

Lustig R & Malhotra A, "The cholesterol and calorie hypotheses are both dead — it is time to focus on the real culprit: insulin resistance," Clinical Pharmacist, *Jul 14, 2017, doi:10.1211/cp.2017.20203046.*

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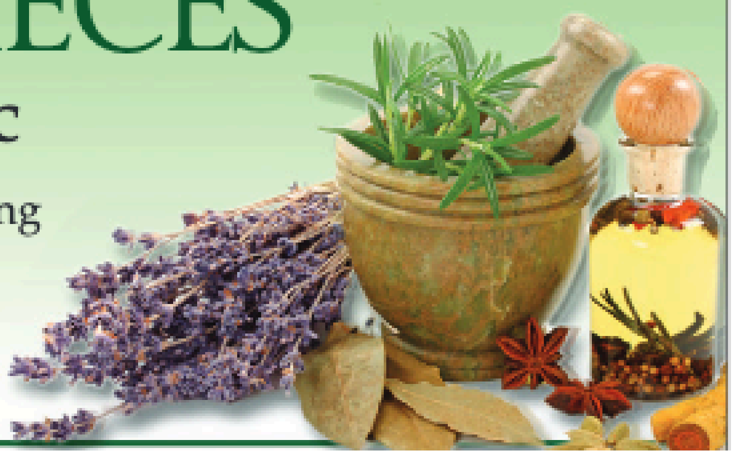


Pandemic Safety Rule #1: Don't Shelter in Place

New research suggests that the COVID-19 virus spreads more readily indoors. A recent study on outbreak patterns noted that "rapid person-to-person transmission of COVID-19 appears likely to have occurred in healthcare settings, on a cruise ship, and in a church." Infection clusters were "associated with closed environments" such as fitness centers, restaurants, and hospitals. Stale indoor air may play a decisive role. A study of ventilation and infection rates in hospital rooms occupied by tuberculosis patients showed that older pre-1950s hospital wards, with large windows on more than one wall and tall ceilings, had lower TB-infection rates than more modern designs. During the Spanish flu pandemic of 1918-1919, it was observed that the simple act of being outdoors, exposed to fresh air and sunshine, appeared to have a strong therapeutic effect on both limiting infections and speeding up recovery time among the infected.

Frieden T, Lee C, "Identifying and Interrupting Superspreading Events—Implications for Control of Severe Acute Respiratory Syndrome Coronavirus 2," Emerging Infectious Diseases, *2020; 26(6), doi:10.3201/eid2606.200495; Qian H, Li Y, Seto W, et al., "Natural ventilation for reducing airborne infection in hospitals,"* Building and Environment, *2010; 45: 559-565; Hobday R, Cason J, "The open-air treatment of pandemic influenza,"* American Journal of Public Health, *2009; 99 Suppl 2(Suppl 2): S236–S242, doi:10.2105/AJPH.2008.134627.*

Pandemic Safety Rule #2: Don't Wear a Cloth Mask

The World Health Organization warned that wearing a medical mask "may create a false sense of security" against COVID-19 and that "no evidence is available on its usefulness to protect non-sick persons." A study published in the *British Medical Journal* found that healthcare workers caught viruses from their patients 13 times more often if they wore a cloth mask than if they wore a medical mask. A Chinese study found that a medical mask was no more protective against viruses than wearing no mask at all. The studies claim that cloth masks provide breeding grounds for viruses and that medical masks are ineffective against them.

WHO, "Advice on the use of masks in the context of COVID-19," 6 April 2020, at https://www.who.int/publications-detail/advice-on-the-use-of-masks-in-the-community-during-home-care-and-in-healthcare-settings-in-the-context-of-the-novel-coronavirus-(2019-ncov)-outbreak; MacIntyre C, Seale H, Dung T, et al., "A cluster randomised trial of cloth masks compared with medical masks in healthcare workers," British Medical Journal Open, *2015, Vol. 5, No.4: e006577, doi:10.1136/ bmjopen-2014-006577; MacIntyre C, et al., "A cluster randomized clinical trial comparing fit-tested and non-fit-tested N95 respirators to medical masks to prevent respiratory virus infection in health care workers,"* Influenza and other Respiratory Viruses, *2011; 5(3): 170-179, doi: 10.1111/j.1750□2659.2010.00198.x.*

Pandemic Safety Rule #3: Get Plenty of Sunshine

During lockdown scenarios, many people are spending more time than usual indoors. It is well known that there is a seasonal drop in Vitamin D, or 25-hydroxyvitamin D (25(OH)D), levels, especially in northern latitudes. Levels of 25(OH)D are quite low in nursing-home residents, and supplementation with 2,000 IUs of Vitamin D can safely bring levels to normal in most patients. Researchers at Trinity College in Dublin suggested in an editorial in *Alimentary Pharmacology & Therapeutics* that Vitamin-D deficiency could play an important role in the severity of COVID-19 infections. They stated that "the evidence supporting a protective effect of vitamin D against severe COVID-19 disease is very suggestive, a substantial proportion of the population in the Northern Hemisphere will currently be vitamin D deficient, and supplements, for example, 1000 international units (25 micrograms) per day are very safe."

Schwalfenberg G, Genuis S, "Vitamin D supplementation in a nursing home population," Molecular Nutrition and Food Research, *2010; 54(8): 1072-1076; Grant W, Lahore H, McDonnell S, et al., "Evidence that Vitamin D Supplementation Could Reduce Risk of Influenza and COVID-19 Infections and Deaths,"* Nutrients, *2020; 12(4), 988, at https://doi.org/10.3390/nu12040988; Rhodes J, Subramanian S, Laird E, Kenny R, "Editorial: low population mortality from COVID-19 in countries south of latitude 35 degrees North supports vitamin D as a factor determining severity,"* Alimentary Pharmacology & Therapeutics, *2020; 51(12): 1434-1437, https://doi.org/10.1111/apt.15777.*

Grapes and Sunshine?

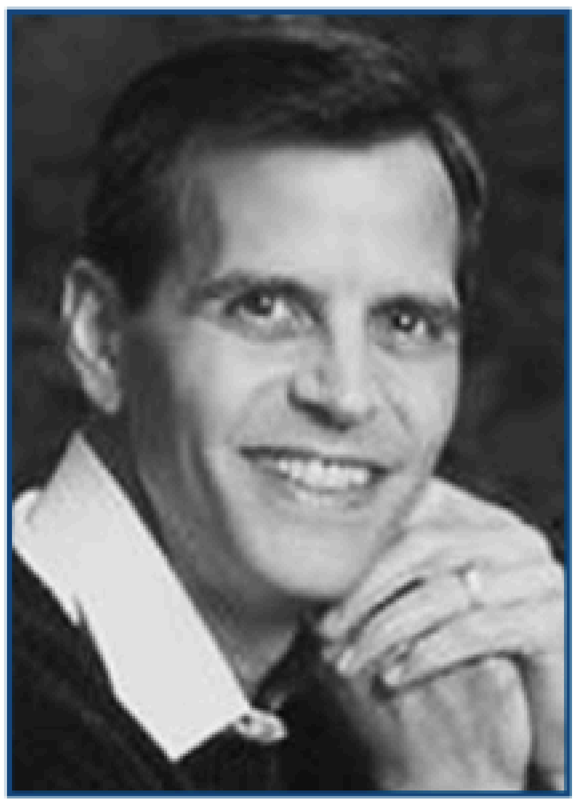
The Environmental Working Group (EWG) reports that Department of Agriculture data reveal that raisins show high levels of contamination from pesticide residues. Of 670 raisin samples analyzed, 99 percent tested positive for at least two pesticides. The average sample was contaminated with more than 13 pesticides. The USDA tested both conventional and organic raisins. Pesticides were not detected as frequently on organic raisins, but in some cases there were no differences between organic and conventional. Imidacloprid, a bee-killing and neurotoxic nicotinoid pesticide, was detected on 84 percent of raisins. Bifenthrin, a pesticide associated with cancer and damage to the developing nervous system, was found in 77 percent of raisin samples. It is classified by the Environmental Protection Agency as a possible human carcinogen. Since even organic raisins are not pesticide free – 78 percent of organic raisins were contaminated with bifenthrin – the EWG recommends that consumers choose uncontaminated fresh produce instead of raisins of any variety. Many parents give their children raisins as a "healthy sweet." According to *Zion Market Research*, children under the age of 15 eat about half of the raisins consumed in the U.S., around 208 million pounds of raisins each year.

EWG Science Team, "EWG's 2020 Shopper's Guide to Pesticides in Produce," EWG, *March 25, 2020, at https://www.ewg.org/foodnews/summary.php; ZMR staff, "Raisins Market: by Product Type (Natural Seedless, Golden Seedless, Black Currant and others (Sultana and Muscat), by Application (Food Industry, Food Service Providers and Households) and by Geography: Global Industry Perspective, Comprehensive Analysis, and Forecast, 2018 – 2026,"* Zion Market Research, *October 18, 2019, at https://www.zionmarketresearch.com/report/raisins-market*

Seafood for a Healthy Gut

Scientists from Norway and Denmark showed that feeding people a seafood-rich diet for a month stimulated growth of more beneficial microorganisms and fewer harmful ones in their gut microbiomes than when the same people were fed a diet without seafood. The researchers recruited 20 people and broke them into two groups. Half were given lunches and dinners that featured cod, pollock, and scallops. The other half stuck to a diet with mainly chicken, turkey, lean beef, pork, eggs, and milk products. After a month, both groups took a three-week break and then switched to the other diet. When they were on the seafood diet, the participants showed an increase in helpful probiotic bacteria and a decrease in levels of the harmful types. Other studies have shown that eating omega-3 fatty acids can increase the abundance of lactobacillus in your microbiome and can increase levels of another helpful bacterium called Bifidobacterium. Bifidobacteria are important not only for digestion but also for controlling the population of harmful bacteria. Omega-3 fatty acids are also anti-inflammatory, which is important for gut health by making the intestinal walls less permeable.

Schmedes M, Brejnrod A, Aadland E, et al., "The Effect of Lean-Seafood and Non-Seafood Diets on Fecal Metabolites and Gut Microbiome: Results from a Randomized Crossover Intervention Study," Molecular Nutrition & Food Research, *2019; 63(1):e1700976, doi: 10.1002/mnfr.201700976; Bomba A, Nemcová R, Gancarcíková S, et al., "The influence of omega-3 polyunsaturated fatty acids (omega-3 pufa) on lactobacilli adhesion to the intestinal mucosa and on immunity in gnotobiotic piglets,"* Berliner und Münchener tierärztliche Wochenschrift, *01 July 2003; 116(7-8):312-6; Watson H, Mitra S, Croden F, et al., "A randomised trial of the effect of omega-3 polyunsaturated fatty acid supplements on the human intestinal microbiota,"* Gut, *2018, Vol. 67, Issue 11:1974-1983.*



HEALTH BITS & PIECES

By Michael Janson, M.D. © 2008 Michael Janson, M.D.

◆ A diet high in fruits, vegetables, whole grains, beans, nuts, and fish lowers the risk of developing Parkinson's disease (PD). A compilation of data from the Health Professionals' Follow-up Study of 49,692 men and the Nurses' Health Study of 81,676 women showed that these dietary choices could lower the risk of PD by 30 percent, compared to a typical Western diet. (Gao X, et al., "Prospective study of dietary pattern and risk of Parkinson disease," *Am J Clin Nutr*. 2007 Nov;86(5):1486-94.) The typical Western diet that they reported was high in saturated fat, refined grains, red meat, sweets, and fried foods. Most people realize that these foods are unhealthy, but this has not stopped their widespread consumption. The authors noted the great benefit of a plant-based diet, plus fish, in preventing PD, and this is the same diet that appears to protect from other degenerative diseases.

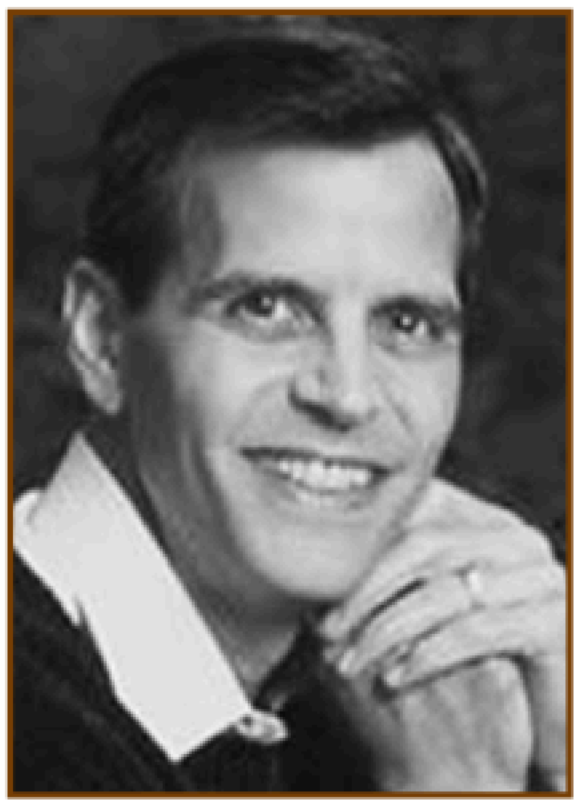
◆ Low blood levels of markers for Vitamin-B12 function are associated with an increased rate of mental decline. A study in England evaluated 1648 participants over 65 years old for 10 years. Serum markers for B12 activity (holotranscobalamin and methylmalonic acid) were inversely associated with mental decline, while the level of B12 itself was not related to mental function, indicating that the B12 level is not as important as its activity. (Clarke R, et al., "Low vitamin B-12 status and risk of cognitive decline in older adults," *Am J Clin Nutr.* 2007 Nov;86(5):1384-91.) The highest level of the markers was associated with a 30-percent reduction in loss of cognitive function over the 10 years. On the other hand, higher levels of homocysteine (a metabolite linked to loss of brain function and heart disease) were associated with a greater than 50-percent increase in the rate of cognitive decline. Vitamin B12 helps to lower levels of homocysteine, but this is not the only way it might help brain function. In another study with some of the same researchers, 195 subjects were given supplements of B12, folate, or a placebo for six months. B12 and folate supplements increased the level of betaine in the blood. Betaine is a methyl donor, and higher levels were associated with improved memory. (Eussen SJ, et al., "The association of betaine, homocysteine and related metabolites with cognitive function in Dutch elderly people," *Br J Nutr*. 2007 Nov;98(5):960-8.)

◆ Maintaining both a trim waist and upper body strength is one way to reduce the risk of dying early. In a study of 4107 men 60 to 79 years old, those with the largest biceps with waists less than 40 inches had the lowest mortality over a six-year period. (Wannamethee SG, et al., "Decreased muscle mass and increased central adiposity are independently related to mortality in older men," *Am J Clin Nutr*. 2007 Nov;86(5):1339-46.) Neither waist size nor bicep size alone were as predictive, although bicep size did relate to lowered mortality. This indicates that it is most important to stay trim and maintain strength at the same time. Waist size greater than 40 inches and a high waist to hip ratio were both associated with an increased risk of mortality. A large bicep combined with a waist size over 40 inches was associated with a 36-percent higher mortality risk.

◆ Chronic obstructive pulmonary disease (COPD, usually the result of smoking) is a contributor to early mortality. New research shows that eating cured meats – such as processed meats (bologna, salami), bacon, and hot dogs – increases the incidence of COPD, even independent of smoking. (Varraso R, et al., "Prospective study of cured meats consumption and risk of chronic obstructive pulmonary disease in men," *Am J Epidemiol*. 2007 Dec 15;166 (12):1438-45.) In this research on 42,915 men in the Health Professionals Follow-up study, those who ate the most cured meats (4-6 servings per week) had more than 2.5 times the risk of COPD compared to those who ate the least (less than 1 serving per week). My negative opinion of eating meat is not based on bias or preconceived notions (I grew up eating lots of meat), but instead upon my observations of the overwhelming weight of the scientific research over the past 36 years.

◆ Happiness appears to reduce inflammation and lower the risk factors for heart disease and hypertension. While a positive mood has long been associated with better health, it is not clear why this is so. New research suggests some possible reasons. In a study in England of 2873 healthy adult subjects, a positive mood appears to reduce the blood levels of cortisol, a hormone secreted in times of stress and associated with lowered immunity, increased obesity, and high blood pressure. (Steptoe A, et al., "Neuroendocrine and inflammatory factors associated with positive affect in healthy men and women," The Whitehall II Study, *Am J Epidemiol*. 2008 January 1;167(1):96-102.) In other findings, in women but not men, positive moods were associated with reduced levels of the inflammatory markers, C-reactive protein (CRP) and interleukin-6 (IL6). Researchers asked the subjects to keep a record of their feelings and moods during the study – whether they were happy, excited, or content. High CRP is a known risk factor for heart disease. High levels of both IL6 and CRP are associated with increased cancer risks. The great benefits from positive feelings and an upbeat mood were reported decades ago by Norman Cousins in his book, *Anatomy of an Illness*. The great question, of course, is how to achieve it.

Michael Janson, M.D., is Past President of the American College for Advancement in Medicine and the author of four books, including Dr. Janson's New Vitamin Resolution *and the* User's Guide to Heart Healthy Supplements. *He writes and publishes a free monthly newsletter,* Dr. Janson's Healthy Living, *available at his website, www.drjanson.com. Dr. Janson does phone and e-mail consults on nutrition, lifestyle, and dietary supplements. He is also a consultant for companies in natural health care. He can be reached at drjanson@drjanson.com.*



HEALTH BITS & PIECES

By Michael Janson, M.D. © 2008 Michael Janson, M.D.

◆ A new animal study suggests that the artificial sweetener, saccharin, may actually promote weight gain and fat deposition. Rats that were given either sugar or saccharin had different responses. Those fed saccharin ate more food and had a lowered metabolism than those fed the sweetener with caloric value (the sugar in this case was glucose). (Swithers SE, Davidson TL, "A role for sweet taste: Calorie predictive relations in energy regulation by rats," *Behav Neurosci.* 2008 Feb;122(1):161-73.) Artificial sweeteners have never been shown to have any health value, and have never been shown to promote weight loss or to help diabetics. It is possible that the sweet taste, even without the calorie content, increases cravings for sweets. In this study, the non-caloric sweetener altered metabolism and appetite more than the sugar. The same is likely to be true for other non-caloric sweeteners. Most of these sweeteners have had a number of reported risks (such as cancer and neurological problems). If this animal data is true for humans, then diabetics would be particularly at risk, as they often are counseled to use non-caloric sweeteners in spite of a lack of data supporting their value. Unfortunately, weight gain and lowered metabolism increase their difficulty in handling blood sugar.

◆ Researchers evaluated the health habits of 4770 men without benign prostate hyperplasia (BPH) at the start of the study and followed them for seven years. (Kristal AR, et al., "Dietary Patterns, Supplement Use, and the Risk of Symptomatic Benign Prostatic Hyperplasia: Results from the Prostate Cancer Prevention Trial," *Am J Epidemiol.* 2008 Feb 7 [Epub ahead of print].) Men with high fat consumption (particularly but not only saturated fat) had a 31-percent higher risk of developing BPH during the trial compared to men with the lowest fat consumption. High vegetable intake was associated with a reduction in risk of 31 percent, and drinking two or more alcoholic beverages per day reduced the risk by 33 percent compared to subjects who consumed no alcohol at all. (Two or more drinks per day is a lot of alcohol with other associated risks, so it is better to find other ways to reduce BPH through diet and maintaining normal weight.) Men who consumed meat every day had a 38-percent higher risk, but higher protein intake appeared to lower the risk by 15 percent. Other sources of protein include beans, nuts, seeds, whole grains, and vegetables.

◆ Whole grains have many health benefits related to their fiber content, vitamins, minerals, essential fatty acids, and other phytochemicals (none of which are found in refined grains, such as white flour). A new study shows that these foods (whole wheat, millet, brown rice, corn, oats, barley, rye, etc.) help with weight loss and reduce cardiac risk factors. Researchers studied 50 obese adults with metabolic syndrome (a complex of obesity, abdominal fat, high blood lipids, hypertension, insulin resistance, and a tendency to inflammation) and put them on a reduced calorie diet. Half were put on whole grains as part of the diet and half were put on refined grains. (Katcher HI, et al., "The effects of a whole grain-enriched hypocaloric diet on cardiovascular disease risk factors in men and women with metabolic syndrome," *Am J Clin Nutr.* 2008 Jan;87(1):79-90.) Both groups lost weight on the diet (due to calorie restriction), but those on the whole grains lost more abdominal fat than the group on the refined grains. The inflammatory marker C-reactive protein (or CRP) was reduced by 38 percent in the group on whole grains, but not changed in the refined-grain group. Other studies have shown that whole grains reduce the tendency of the blood to clot by inhibiting excessive platelet aggregation.

◆ In a study of 2176 breast cancer patients and 2326 matched controls, exercise reduced the risk of breast cancer from 20 to 40 percent. Women with the highest levels of physical activity through heavy work had the most benefit compared to the sedentary controls. (Peplonska B, et al., "Adulthood lifetime physical activity and breast cancer," *Epidemiology.* 2008 Mar;19(2):226-36.) Women who increased their activity during their 50s had some of the best reduction in risk (27 percent lower). The benefits were consistent even for women who were overweight or post-menopausal, or those who had a family history of breast cancer. The risk of larger and more advanced tumors was especially reduced. Previous studies have shown the benefits of exercise in cancer prevention. One of the benefits of exercise is that it stimulates the production of Coenzyme Q10, a valuable antioxidant.

◆ The DASH diet (Dietary Approaches to Stop Hypertension) is the diet recommended by the National Heart, Lung, and Blood Institute to prevent and treat hypertension. It involves increasing whole grains, fruits, and vegetables in the diet while lowering meat, chicken, and fish, and including nuts, seeds, and beans and some low-fat of non-fat dairy products. A new study shows that adopting this eating pattern can not only lower blood pressure but also reduce the incidence of heart attacks and strokes. (Fung TT, et al., "Adherence to a DASH-Style Diet and Risk of Coronary Heart Disease and Stroke in Women," *Arch Intern Med.* 2008 Apr 14;168(7):713-20.) Researchers followed 88,517 women for 24 years, and evaluated food-frequency questionnaires seven times during that period. Lifestyle and medical information were collected every two years. Based upon the food questionnaires, the subjects were assigned a score for how closely they followed the DASH diet. The researchers noted a clear association of the strictness with which subjects followed the diet (a higher score) and a reduction in the incidence of heart attacks and strokes. Women with the highest scores (following the diet most closely) had a 24-percent lower risk of heart attacks and an 18-percent lower risk of strokes. (Had they left out the meat and chicken altogether, then they might have done even better, according to other research.) A subgroup of the participants was evaluated with blood tests during the study. In this group, closer adherence to the diet also led to lower levels of C-reactive protein (CRP) and interleukin-6, both of which are markers for increased cardiovascular risk. This mostly vegetarian diet is most likely to provide a range of other benefits.

Michael Janson, M.D., is Past President of the American College for Advancement in Medicine and the author of four books, including Dr. Janson's New Vitamin Resolution *and the* User's Guide to Heart Healthy Supplements. *He writes and publishes a free monthly newsletter,* Dr. Janson's Healthy Living, *available at his website, www.drjanson.com. Dr. Janson does phone and e-mail consults on nutrition, lifestyle, and dietary supplements. He is also a consultant for companies in natural health care. He can be reached at drjanson@drjanson.com.*

HEALTH BITS & PIECES

By Bill Sardi

◆ **Arterial disease: cholesterol or calcium?** A question goes begging for an answer. With all the efforts by modern medicine to prevent heart attacks with diets and pills, why do Americans experience the same number of heart attacks each year? Why is there no meaningful decline in the coronary artery disease mortality rate? In their review of published data, Drs. John Abramson and James Wright cite there is no evidence that statin cholesterol-lowering drugs reduce mortality rates. [*Lancet* 2007 Jan 20; 369(9557):168-9] More recently, French doctors concede many heart attacks are explained by factors other than cholesterol (such as plaque rupture, alcohol or drug abuse, excessive blood clotting, and coronary artery spasm). [*Bulletin Academy National Medicine* 191: (4-5) 815-24, 2007] Cholesterol is soft and waxy and not likely to be a factor in arterial stiffening. But arterial ***calcifications*** do stiffen arteries. [*Acta Pathology Microbiology Immunology Scandinavia* [A]. 1987; 290:1-28] Indeed, only 3% of arterial plaque is cholesterol, 50% is calcium. [*International Journal Cardiology* 1991, Nov; 33 (2): 191-8]

Coronary heart disease incidence and mortality remains very low in Japan despite major dietary changes and increased risk factors that should have resulted in a substantial increase in coronary heart disease rates. For men aged 40-49 years, levels of total cholesterol and blood pressure have been similar in Japan and the U.S. throughout their lifetimes. This prompted disease investigators to compare a group of men in Kasutsu City, Japan with men in Allegheny County, Pennsylvania. While the Japanese men exhibited less-favorable profiles for many risk factors, the presence of arterial calcification (10 or greater calcium score) was only about half that of American men. [*American Journal Epidemiology* 165: 617-24, March 15, 2007]

A recent analysis published in *The New England Journal of Medicine* reveals a 773-967% increased risk for a major adverse event (heart attack or sudden cardiac death) for adults with calcium artery scores of 101-300 and above 300 respectively, compared to subjects with a calcium artery score of zero. [*New England Journal Medicine* 358: 1336-45; March 27, 2008] In a relatively recent study, a statin drug reduced serum cholesterol levels by -53%, and C-reactive protein by -49%, but the rate of change for coronary artery calcification was +26% per year among statin drug users compared to only +18% among patients given an inactive placebo tablet. Patients with low cholesterol levels still developed arterial calcifications. [*Heart* 92: 1187-88, Sept. 2006] Modern medicine is getting closer to declaring calcification as the major promoter of arterial disease. The cholesterol theory of heart disease should be abandoned.

◆ **Mental depression and nutrients.** It is known that low levels of B vitamins, particularly folic acid (Vitamin B9), are associated with mental depression. [*Journal Epidemiology Community Health* 2007 Jul; 61(7):631-7] Folic-acid supplementation often reduces symptoms of depression, particularly among older patients. [*Clinical Nutrition* 26(5):545-51, Oct. 2007] Now add the trace mineral selenium to the list of natural anti-depressants, particularly for older adults. In a recent study conducted in Great Britain, even though no subjects exhibited low reference ranges of selenium, 8 weeks of selenium supplementation produced a marked decrease in depression. [*Gerontology* May 8, 2008, early online] One-third of older people in nursing and/or residential homes have significant symptoms of depression.

◆ **Gout and Vitamin C.** Gout (common symptom = painful big toe, often associated with meat eating and high iron levels) was recently studied among 1387 men. Greater intake of Vitamin C was associated with lower blood-serum, uric-acid concentrations – uric acid being the agent that causes symptoms of gout. As Vitamin-C intake levels increased, uric acid concentrations declined:

Vitamin C intake/day	Uric acid level
90-249 mg	6.4
250-499 mg	6.1
500-999 mg	5.7
1000 mg or more	5.7

Vitamin C prevents gout. [*Journal Rheumatology* May 1, 2008, early online]

◆ **Brainy dogs.** Teaching old dogs new tricks can be a challenge, but when University of Toronto researchers provided aged dogs a nutraceutical supplement of phosphatidylserine, Ginkgo biloba, Vitamin E, and Vitamin B6, the dogs exhibited improved memory. [*Canadian Veterinary Journal* 2008 Apr; 49(4):379-85] Dogs do not know what the placebo effect is. Senility is not inevitable and it can be reversed.

Continued on page 29

conventional CAM and other modalities? As proposed, there does not appear to be this type of opportunity for alternative thinking among the appointed Institute representatives. If the real goal is to set "national priorities" on treatment options for diseases and medical conditions, why not include all of the options currently on the table and being used in our health-care system? From a Federal health-care policy and FDA regulatory point of view, it is the old Latin saying of "Qui Bono" (*who benefits*) that applies to these matters.

Yet, the real question is why do we need just another bureaucratic overlay burdening our health-care system? And do we especially need a bureaucracy in which views friendly to our own would always be in the minority? The NHF says no. Constant tinkering by the Federal government – our latest "God on Earth" – may satisfy the desires of the average American for someone to do ***something***, but that still does not make it the proper answer. Any bill or program that interferes with natural market mechanisms, and that favors any business at the expense of another, should be opposed in the same way that so many of us oppose artificial drug interventions in our own bodies.

The NHF continues to keep its eye on the prize. And that prize is optimal health and the preservation and enhancement of the health freedom of all individuals to choose their own health-care path, free of coercion.

Health Bits and Pieces
Continued from Page 25

◆ **MSG and obesity.** The taste enhancer monosodium glutamate (MSG) in foods has long been damned for causing headaches and other undesirable symptoms. If for nothing else, why do we bewail high obesity rates and then permit MSG to be added to baby foods, prepared foods and soups, and even liquid meal replacements for seniors? MSG is widely used in Asia and the obesity epidemic is not as prevalent among Asian populations. So does MSG contribute to overeating problems? Researchers at the Department of Nutrition at the School of Public Health, University of North Carolina at Chapel Hill, investigated. These researchers found 82% of study participants in China added MSG to their foods, with the average intake being 330 milligrams per day. Prevalence of overweight was higher among MSG users. The risk of being overweight more than doubled among high-MSG users. [*Obesity* May 22, 2008, early online]

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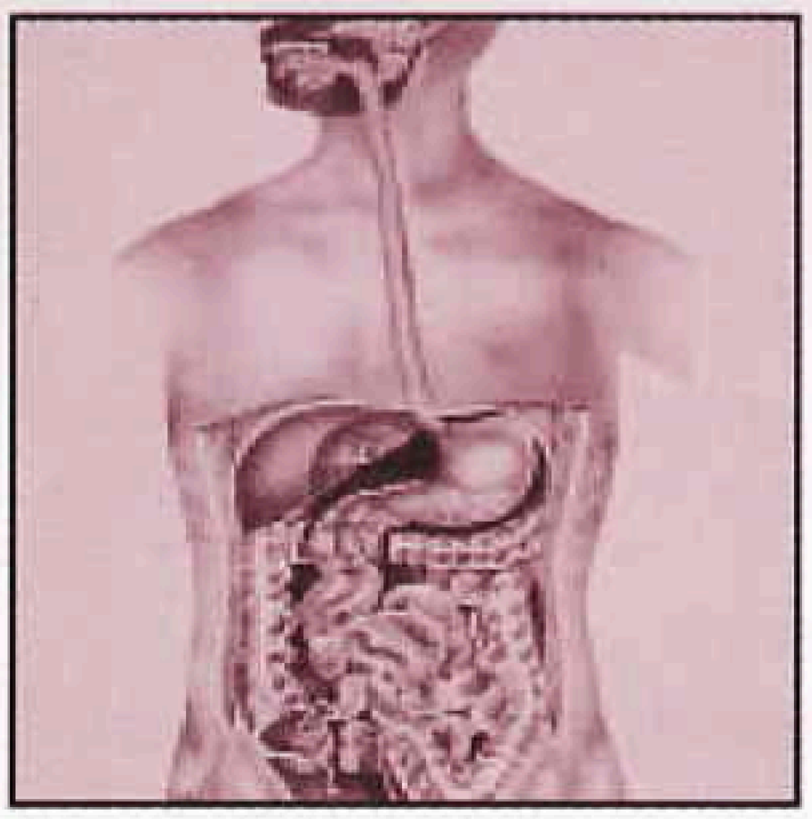
Bill Sardi is a health journalist, consumer advocate, and inventor of natural-health technologies. Based in San Dimas, California, he has written over a dozen books on topics such as autism, sudden infant death, iron overload, and aging. His website is: www.knowledgeofhealth.com.

The Secret To Effective Colon Cleansing Is OXYGEN!

It's no coincidence that gastrointestinal disorders (i.e. constipation, bloating, gas, bowel irregularity, acid reflux, etc.) are the most common complaints in doctors' offices and the main reason people are admitted to hospitals. Sadly, many of these problems stem from years of eating dead, processed foods and poor food combinations. Once in the colon these foods can ferment and putrefy, impeding healthy digestion.



What Is Temple Cleanse?

Temple Cleanse contains a special bond of ozonated magnesium oxide compounds that have been stabilized to time-release oxygen throughout the intestinal system for up to 12 hours or more. Oxygen is considered to be nature's most powerful cleanser. In a healthy functioning intestinal system, your flora releases an abundance of oxygen that helps keep the colon clean. Unfortunately, when the colon becomes overwhelmed from poor dietary habits, flora can die off and unwanted microorganisms can feed and breed on the stagnant wastes. By driving oxygen into the colon, Temple Cleanse helps to gently break loose impacted wastes and cleanse the colon like no other product can.

How Temple Cleanse Works

Once Temple Cleanse comes in contact with the hydrochloric acid in your stomach, a natural chemical reaction occurs where by the oxygen slowly separates away from the magnesium and disperses throughout the entire colon.

What Temple Cleanse Can Do For You

When Temple Cleanse is used according to directions and in conjunction with a properly balanced, non-toxic, intestinal friendly diet, it can help effectively eliminate excess wastes, restore regularity to the bowels, and create an inhospitable environment for anaerobic bacteria. Once impacted wastes are safely eliminated from the body and the colon is functioning properly again, the intestinal system will have the tools it needs to run on all cylinders and play a pivotal role in the body's overall health.

How Is Temple Cleanse Different From Other Colon Cleansers On The Market?

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Can Temple Cleanse Help Balance The Body's pH Levels?

Excess wastes that clog the intestinal system can eventually pass through the colon wall and into the blood stream worsening an acidic state. Temple Cleanse helps to eliminate excess wastes from the intestinal system with its high oxygen delivery. By properly cleansing the colon of its wastes, and changing to an alkaline-based diet, Temple Cleanse can help assist the body in maintaining proper pH balance.

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HEALTH BITS & PIECES

By Bill Sardi

◆ The Vitamin-D revolution is underway and when and if the public catches on and begins practicing daily supplementation, mortality rates are sure to decline significantly, seasonal influenza will be abated, wintertime heart failure diminish, the need for most vaccines and antibiotics would be abolished, autism would likely disappear, the use of anti-depressants would drop, and cancer rates would decline beyond what anyone could possibly anticipate. In fact, Vitamin-D deficiency is implicated in most diseases of civilization, writes Dr. John Cannell of The Vitamin D Council. Natural Vitamin-D levels, those found in humans living in a sun-rich environment, are between 40-70 nanograms per milliliter of blood serum, a level obtained by few modern humans. Treatment of Vitamin-D deficiency in otherwise healthy patients with 2,000-7,000 IUs of oral Vitamin D per day should be sufficient to maintain year-round Vitamin-D levels between 40-70 nanograms per milliliter. [*Alternative Medicine Review*, 2008 Mar; 13(1):6-20] There is so much Vitamin-D research being reported that it deserves to hog this whole column. For example:

Blood Concentration/Disease Prevalence

Vitamin D levels Nanograms/milliliter Nanomole/liter	Lower Less than 20 Less than 50	Medium 20-29 50-73	Optimal Greater than 30 Greater than 74	Percent difference
Coronary heart disease	7.3%	6.7%	5.3%	-28%
Heart disease	3.2%	2.4%	1.5%	-28%
Stroke	3.2%	2.0%	2.5%	-22%
Peripheral artery disease	7.7%	5.0%	3.6%	-54%

Source: American Journal Cardiology Dec 1, 2008 102: 1540-44

It takes about 5000 IUs of Vitamin D3 per day to achieve this optimal range cited above.

Researchers at the Eunice Kennedy Shriver National Institute of Child Health and Human Development, National Institutes of Health in Bethesda, Maryland show that women who develop gestational diabetes (during pregnancy diabetes) have lower Vitamin-D levels. About a third of the pregnant women tested exhibited frank Vitamin-D deficiency. [*PLoS ONE*, 2008; 3(11):e3753]

While Mediterranean lands like Greece are known as sunny countries, the majority of nursing-home patients in southern Greece were found to be Vitamin-D deficient and prone to bone softening (osteomalacia). [*J Endocrinology Investigation*, 2008 Sep; 31(9):784-7]

More disconcerting is the discovery that Vitamin-D deficiency during prenatal and early-life may increase susceptibility to diseases like cancer, osteoporosis, and autoimmune diseases later in life. [*Nutrition Reviews*, 2008 Dec; 66(12):710-20] Vitamin-D deficiency produces profound and permanent changes in the prenatal brain. [*Nutrition Reviews*, 2008 Dec; 66(12):726-9]

◆ Supplemental oral zinc is often employed when anorexic patients are being treated. The idea of using zinc to encourage food intake now has some science behind it. Zinc supplementation causes an increase of ghrelin in animals. Ghrelin is a hormone that is known to increase food intake. [*The Journal of Nutritional Biochemistry early online*, Oct. 15, 2008] This discovery has good and bad applications. Supplemental zinc may be worth putting in baby foods to encourage eating, but added to the food supply of middle-agers, it may promote obesity. Further studies will tell.

◆ A question arises: What should the 1 million-plus adults who experience a heart attack do nutrient-wise after a heart attack? An animal experiment sheds some light on the answer to this question. Rodents were subjected to an intentional heart attack and later circulation to the heart was allowed to resume. Prior to the heart attack, animals received 300 mg of the amino acids carnitine and taurine and the antioxidant Coenzyme Q10, and for the four weeks following. Survival significantly improved from 34% to 60% and reduced the size of dead tissue in the heart from 42% to 30%. [*Nutrition, Metabolism and Cardiovascular Diseases*, 18 (10) 647-706, December 2008]

◆ A study was conducted among 11,135 Northern Italian men, 18-94 years of age, and compared against 1927 men living in New York. Those men who drank 4 or more alcoholic drinks per day were the least educated and had the highest rates of smoking and high blood pressure. However, men who consumed their alcohol with food exhibited far lower rates of high blood pressure. Abstainers had the lowest rate of hypertension. [*Nutrition, Metabolism & Cardiovascular Diseases, early online*, August 3, 2008]

◆ Researchers in Greece examined 1514 men and 1528 women who exhibited no evidence of cardiovascular disease. Five years later these researchers attempted to determine which dietary patterns in this group of adults produced the highest rate of heart disease and strokes. A diet pattern mainly characterized by sweets, red meat, margarine, salty nuts intake, and hard cheese, as well as alcohol intake, was associated with higher cardiovascular disease risk. The incidence of cardiovascular disease was 11.0% among males and 6.1% in females. A dietary pattern characterized by consumption of small fish, whole-grain cereals, biscuits, and olive oil produced a cardiovascular disease nearly half that of the most-risky dietary pattern. [*Nutrition, Metabolism and Cardiovascular Diseases, early online*, August 21, 2008]

◆ It works better and faster than drugs to control blood pressure, cholesterol, and markers of chronic inflammation. And it has been proven in a controlled human study of 111 healthy adults. In just 3 weeks, oral Camellia sinensis capsules lowered blood pressure by 4-5 points. Inflammation dropped by 12%. Men experienced about a 10-point drop in LDL cholesterol. Camellia sinensis is the botanical name for green tea. [*Nutrition, early online*, October 9, 2008]

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Bill Sardi is a health journalist, consumer advocate, and inventor of natural-health technologies. Based in San Dimas, California, he has written over a dozen books on topics such as autism, sudden infant death, iron overload, and aging. His website is: www.knowledgeofhealth.com.

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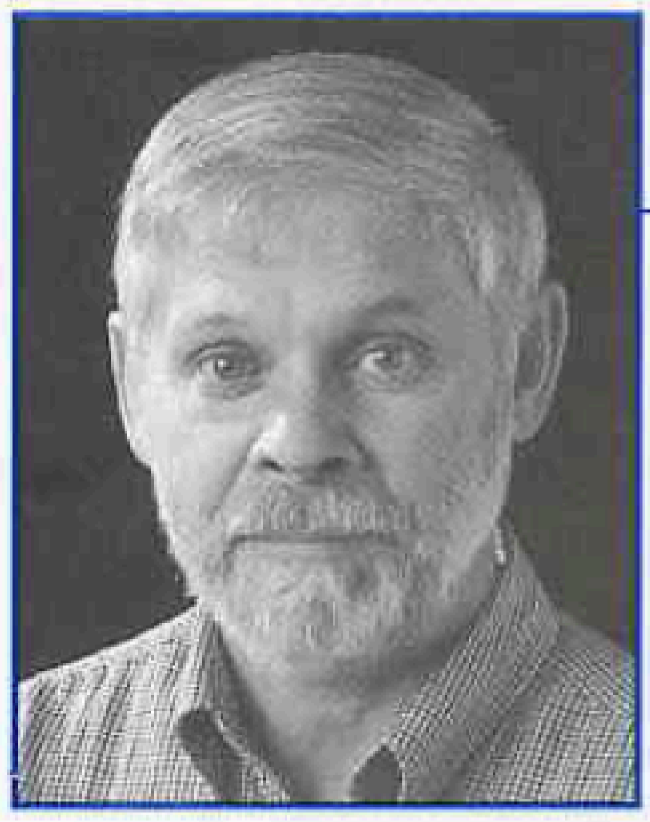
ARIZONA HEALTH-FREEDOM PROPOSITION NARROWLY DEFEATED

In the recent American 2008 elections, various States had propositions on their ballots for citizen consideration and voting. In Arizona, one such proposition was Proposition 101 (the "Freedom of Choice in Health Care Act"), which was an initiative on its Nov. 4th ballot proposing to amend the Arizona Constitution to ensure freedom of choice in health plans and the right to pay privately for lawful medical services.

Unfortunately, Proposition 101 did not pass. While Proposition 101 won in 12 out of 15 Arizona counties, it failed to pass on the Statewide popular vote by 1,048,624 to 1,039,585 votes (50.2 to 49.8 percent), a very small margin. The Proposition's backers, Drs. Eric Novack and Jeffrey Singer, announced, "We regret that we were unable to overcome the significant financial disadvantage we had and the intervention of the Governor and a major state agency in the campaign. Regardless, we are proud of the effort we put forward and are looking forward to continuing to be a part of the health care reform discussion in our state well into the future."

Given the close vote, this proposition will almost certainly be placed back on the Arizona ballot in 2010 for voter approval.



BILL C6 – A CRITIQUE

By Richard DeSylva, R.H., D.NM

In Canada, Bill C6 has recently been introduced in Parliament.[1] If enacted into law, it would place enormous regulatory power into the hands of minor food-and-drug bureaucrats, such that the existing Canadian Natural Health Products (NHP) industry and, possibly, some of its associated practitioners would be at risk of eventual extinction while those who survived would be nothing more than willing participants in the collapse of the industry. As a former member of this industry, and now as a practitioner, I am offering my practitioner's take on this Bill's dangers and implications.

Second Verse, Same as the First

This Bill is simply a rehashed version of C52, originally introduced in Ottawa last May 2008. As with its companion Bill C51, both Bills would have resulted in serious and profound damage to the natural health industry and perhaps the same profession. Because of this, numerous groups were formed across Canada that worked together to defeat these two Bills.

Both the federal Conservative party and specifically the (then) Minister of Health Tony Clement were under a full-scale assault by the groups; although Clement did offer to amend C51, there remained substantial and widespread dissatisfaction. Legal challenges were formulated, Members of Parliament (MPs) were put on notice, and a Charter of Health Freedom was launched. Finally, in October 2008, Prime Minister Harper prorogued (disbanded) Parliament, calling it dysfunctional. With the election call, all Bills before Parliament died on the order table, and both of these horrible Bills quietly passed into oblivion.

While Clement was on the hustings in his own riding, he was heard to say that if the Conservatives were re-elected, they would bring back C52. True to their word, they have now done so; C52 has been re-born as Bill C6: the so-called Canada Consumer Product Safety Act.

This Act proposes to protect Canadians from the possibility of harm from any consumer product imported into Canada, as well as those produced domestically. While perhaps able to legitimately address some safety issues with imported products such as the ethylene glycol in toothpaste, or the melamine in milk powders noted last year (although existing law already does this), the main thrust of this Bill contains detailed regulations geared more towards domestic products than those from outside the country.

The scope and intended "capture" of these regulations is astounding. This, along with the heavy fines, suggests intent once again to annihilate, not regulate. It is a steam-roller approach that, in its second phase, would then allow for international regulations to be adopted into Canadian law. How would that work?

Destroying Canadian Sovereignty

In its Subsection 36.(2), this Bill states that "[a] regulation made under this Act may incorporate by reference documents produced by a person or body other than the Minister including by *(a)* an organization established for the purpose of writing standards, including an organization accredited by the Standards Council of Canada, ***(b) an industrial or trade organization, or (c) a government.*** " (emphasis added)

Yet, it is not just the Canadian government to which they refer. In the Bill's opening few pages, under Section 2 ("Interpretation"), "government" is defined as, among other things: "*(e)* a government of a foreign state or a subdivision of a foreign state, or *(f)* an international organization of states." So, if the Bill were to be passed, then the Canadian Minister of Health would be able to issue regulations based upon, or actually using, foreign government laws or regulations!

This is further supported by Subsection 36.(4), which states, "[a] regulation made under this Act may incorporate by reference documents that the Minister produces jointly with another government for the purpose of ***harmonizing*** the regulation with other laws." (emphasis added)

Looking generally, then, at Subsections 36.(2)-(7), inclusive, on Regulations, it is all laid out there in specific detail. Canadian health law would no longer be independent but instead incorporate other, foreign legislation, rules, and regulations.

In Subsection 36.(2)(b) mention is made of "industrial or trade organizations." Given the earlier definition of "government" in the definition's subpart *(f)*, this is a specific reference to a "trade" organization, known as the World Trade Organization (WTO), which is nothing less than the enforcement arm of the Codex Alimentarius Commission.

Perhaps you might think that this is simply conjecture on my part; that it only would refer to domestic laws. Why then the following statement on the website of the WTO?

> *"The WTO Agreement is a treaty – the international equivalent of a contract. It is self-evident that in an exercise of their sovereignty, and in pursuit of their own respective national interests, the Members of the WTO have made a bargain. In exchange for the benefits they expect to derive as Members of the WTO, they have agreed to exercise their sovereignty according to the commitments they have made in the WTO Agreement."*

Canada is a signatory to this international treaty and is preparing for the adoption – by stealth – of WTO & Codex Alimentarius guidelines and standards into Canadian law without the benefit of any Parliamentary review, debate, or exercise of democratic due process. Bill C6 makes this abundantly clear.

Exempt So As to Avoid the Law

To facilitate this whole process, and aid and abet its passage into law, Bill C6 and its regulations are exempted from the requirements of the Statutory Instruments Act (Section 64, General Provisions, and Section 37, Interim Orders).

Basically, this Statutory Instruments Act is somewhat akin to the final stamp of approval. It is designed to ensure that any new Act and its regulations conform to existing laws such as the Charter of Rights and the like. One might also add that it is a measure of any Act of Parliament, which, having worked its way through the democratic process, then becomes law. That is, it has been given First and Second Readings, sent to Committee for hearings, returned to the House for a third and final vote, passed, heard by the Senate, finally sent for sanctioning by the Statutory Instruments Act., and onto the Queen's Printers for eventual distribution.

By removing this last requirement, this government demonstrates that it is aware of the implications of the Act, and how it could prove fatal to the new Bill C6. Equally, it would allow more decisions to be made simply through "Orders-in-Council" via the Minister and the Cabinet.

Mere Suspicion Triggers Enforcement Powers

As important as the above-noted issues are, it is necessary to understand the reach and scope of the regulations as they apply domestically. Under Bill C6, an inspector – upon the basis of his or her mere ***suspicion*** of alleged safety concerns – could institute a series of formal actions that would immediately stop any and all business activity of the health-food or health-service business, without even the slightest oversight of independent adjudication, such as a court hearing, to determine culpability. The result of this bureaucratic action is obvious – a small or medium-sized business owner would be unable to earn the income necessary to fight the decision made by one bureaucrat. The power of intimidation that could be wielded by such a bureaucrat as a result would be enormous. The servants would indeed become the masters.

This type of arbitrary bureaucratic power would represent yet another additional encroachment upon our liberties. These encroachments have been inexorably slow and insidious and, more often than not, couched in the usual bland slogans of "protecting the public." Were the State truly interested in protection of the public from harm, there would be a wholesale revocation of the license to sell a number of products, including tobacco, various pharmaceuticals, and GMO foods.

Then "Offenders" Punitively Penalized

A thorough examination of Sections 38-41 (Offences), Section 47 (Administrative penalties), Subsections 50.(2) (a) & (3) (Penalties), Subsection 51.(4a) (Compliance agreements), and Subsections 56.(1) & (2) (Rule(s) of Law Violations), will reveal a scenario of extremely-punitive, expensive, and perhaps even illegal measures for dealing with any perceived offenses. The very structure of compliance agreements and first-time penalties are designed to exert tremendous coercion, ensure total and complete cessation of one's livelihood, and could, in the instance of the natural health-food sector, even eliminate the small-to-medium portion of this industry.

There are a number of sections of this Bill that deny due process, override Civil and Charter rights, and make a mockery of Common Law, such as, among others, Sections and Subsections 4, 20.(2)(a-i), and 56.(1) & (2). Essentially, these Sections force a business owner to comply with any and all requests by a health inspector, including (1) giving – free of charge – any samples requested, (2) allowing the health inspector to seize and detain, or to transfer to a secure location for an undetermined time (at the owner's expense) any equipment used in the manufacture of any product(s), and (3) allowing unchallenged examination of any computer or other file material, including privileged confidential information, which, under this Act, could then be sent to foreign governments, agencies, etc. where the business owner is doing business.

Section 56 removes the right of an individual to claim that he or she was exercising due diligence or was acting on the basis of facts that could exonerate them. Thus, in these and other Sections, the individual is deemed to be guilty even before an open examination of the facts in a court of law. This presumption runs counter to the Canadian Charter of Rights, which presumes innocence until guilt has been proven. It also specifically flies in the face of the 1984 Supreme Court of Canada decision regarding *reverse onus*, in that the person is treated as if they were in fact guilty, and must then prove to Health Canada that he or she is innocent.

It is for this reason that Bill C52 and its "spirit in arms" successor Bill C6 make a forceful argument that a legal challenge would be needed to these and other egregious assaults upon basic human and civil rights should C6 pass. The crux of the matter is the issue of the rights of the individual versus the rights of the State. At what point does the individual yield and give up rights that are core principles of individual liberty? As an example, under this Bill there would be a loss of core private-property rights with property owners being completely unable to prevent the police and government agents from entering and trespassing upon their private property, perhaps causing damage in the process, for which the property owners could not then hold them accountable.

Are NHPs Exempted?

Finally, and of equal note, are Subsections 36.(1)(a) & (b). These Subsections address the matter of exemption, specifically that of a "class" of products, or even a "class" of persons, from the regulations. Given that in Subsection 4.(1) the Act would not apply to products listed in Schedule 1 (such as foods and drugs under the Food & Drug Act), and, further, that NHPs were originally listed as a subset of drugs, it does beg the question, do these products gain an exemption by reason of being that subset, or are they viewed as a distinct and autonomous nonexempt product? And exactly what classes of product or what class of persons will be exempted? For whom or what are these Subsections intended to apply?

These Subsections require further review to establish more certainty in their intent. As written, they could be both beneficial for one class of product or person; or precipitate a collapse of another particular market. At the very least, it should be noted that the wording of this Bill sets the stage for any further amendments to be made through executory Orders in Council. It is this odious proviso to the Bill that portends the dismissal of democratic debate. In doing so, it gives undue powers to a small coterie of individuals whose only allegiance is to their party and their multinational taskmasters.

No Time to Lose

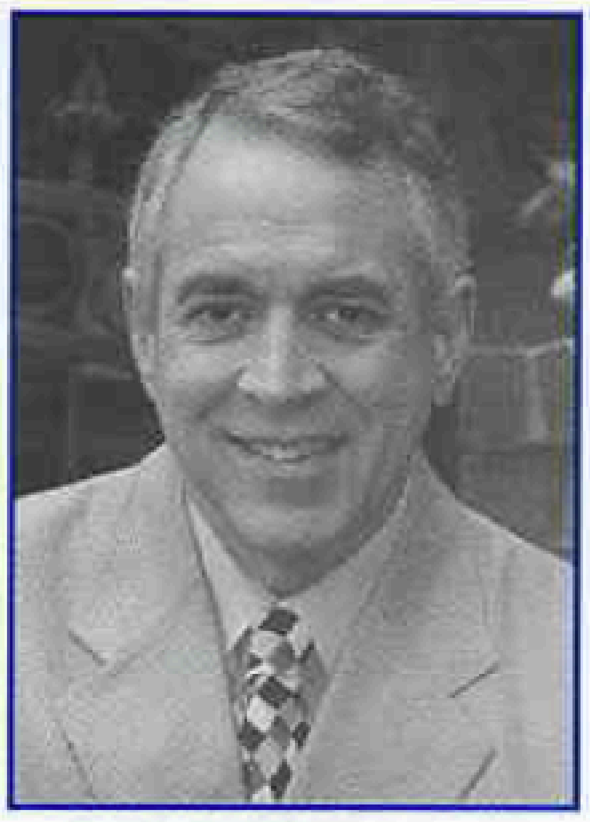
On the certainty that this Bill will be going to Committee and other hearings, it is of the utmost importance that both the public and the industry make substantive and concerted efforts to stop this Bill. All of the activities engaged in last year are a basic starting point for what we must now do. Quite frankly, we have no time to lose. HFN

Richard DeSylva is a well-respected consultant herbalist, specializing in botanic medicine and treating chronic ailments. Based in Ontario, Canada, Rick has been working across both Canada and the United States for 25 years. Rick is also a researcher, writer, lecturer, and teacher, with intimate knowledge of the health and herbal business both as a hands-on businessman and consultant. Founder of the Botanic Institute in 1993, he has also been a professional lobbyist to represent practicing herbalists in Ontario; but he still currently practices those skills in lobbying for herbal medicine. A current board member of the Ontario Herbalist Association, the Canadian Council of Herbal Associations, and the Ontario Doctors of Natural Medicine Association, he also finds time to work on his book Botanic Medicine & The Nature of Disease *as well as write articles for numerous magazines in Canada and the U.S.*

Endnote

1. The text of this Bill may be read at *http://www2.parl.gc.ca/HousePublications/Publication.aspx?Language=E&Parl=40&Ses=2&Mode=1&Pub=Bill&Doc=C-6_1.*

From left to right, Scott Tips, Frankie Ma, and Ian Crane on the set of Sky 200 TV after Frankie Ma's talkshow interview of them on various health-freedom subjects including Codex. 26 January 2009



HEALTH BITS & PIECES

By Bill Sardi

◆ **Origin of Brain Plaque.** Much has been said of the plaques that develop in the brain with advancing age. But the origin of these so-called senile plaques, said to be composed of "amyloid," is nebulous. Researchers in Australia assert that small hemorrhages occur in the brain, caused by weak capillaries in the cerebral cortex. These capillaries are known to become fragile and thus subject to hemorrhaging with advancing age. The fatty amyloid plaque is then attracted to the site of the hemorrhage. This theory would also explain why memory loss can occur without plaque, simply as an aftermath of blocked or constricted blood flow. The accumulated damage caused by multiple tiny strokes could serve as a model to explain Alzheimer's-type dementia. [*Medical Hypotheses*, 2008 June 2] Vitamin C and bioflavonoids provided in the rind of citrus peel are known to strengthen capillaries.

◆ **Calcification and Vitamin K2.** More attention should be given to arterial calcifications rather than cholesterol plaque since 50% of arterial plaque is composed of calcium and only 3% of cholesterol. Stiff arteries are better explained by calcifications rather than by soft, waxy cholesterol. The gradual loss of calcium from bones and progressive stiffening of the arteries links both osteoporosis and arteriosclerosis. Vitamin K, particularly K2, has been demonstrated to inhibit calcification, serving to confirm the health benefits of green leafy vegetables that are relatively rich in Vitamin K. Recent studies add to a growing body of evidence proving the health benefits of Vitamin K2. [*Journal Atherosclerosis Thrombosis*, 2007 Dec;14(6):317-24]

◆ **Fish know better than to take statin cholesterol-lowering drugs.** Because more than one-half of all coronary heart disease deaths and two-thirds of sudden cardiac deaths occur among individuals without recognized heart disease (high-serum cholesterol), researchers are beginning to turn their attention to the compelling data surrounding the cardiovascular benefits of Omega-3 oil. Just one-to-two servings of fish weekly, or approximately 250 milligrams of EPA and DHA (two types of Omega-3 oils provided in fish), reduce the risk for coronary heart disease death and sudden cardiac death by 36%, something that cannot be said for statin drugs. Harvard researchers now contend that fish oil should be the first-line treatment for heart disease. [*American Journal Clinical Nutrition*, 2008 Jun; 87(6):1991S-6S]

◆ **Vitamin D: How much?** While Vitamin D is undergoing a renaissance more than eight decades after its discovery, the Food & Drug Administration has done a good job of scaring most people away from so-called "high-dose" Vitamin D because of unfounded concerns over side effects. While the upper safe limit for Vitamin D intake is 2000 I.U.s (50 micrograms, or 1/20th of 1 milligram), blood levels don't measurably rise till 4000 I.U.s (international units) are consumed. Researchers at Winthrop University Hospital in Mineola, New York supplemented the diet of 138 subjects with adjusted doses of Vitamin D over a 6-month period. The mean daily dose was 3440 I.U.s (86 mcg), which raised blood concentrations of Vitamin D to above 75 nanomoles per liter in almost all subjects and no subjects exceeded 220-nanomole blood concentration. The optimal daily dose was found to be 4600 I.U.s. There were no cases of hypercalcemia, a widely-stated but uncommon side effect. A 5000-I.U. daily dosage of supplemental Vitamin D3 would achieve optimal blood concentrations for almost all adults. [*American Journal Clinical Nutrition*, 2008 Jun; 87(6):1952-8]

◆ **Headache: water, water.** Few think of headaches as being caused by dehydration. In a pilot study, researchers gave 18 headache patients (all with migraine-type headaches) a placebo with advice to consume 1.5 liters of water per day for a period of 12 weeks. This practice reduced the total hours of headache by 21 hours in a two-week period. [*European Journal Neurology*, 2005 Sep; 12(9):715-8]

◆ **Shortage of iron linked to restless leg, attention deficit.** It makes sense. A shortage of iron, less commonly due to dietary deficiency, or more commonly due to malabsorption (caused by intestinal parasites or a lack of stomach acid, or lack of Vitamin C) could, via red blood cell count, reduce delivery of oxygen to the brain or legs, resulting in symptoms of attention deficit disorder or restless leg syndrome during sleep, often among youngsters. [*Medical Hypotheses*, 2008; 70(6):1128-32] In fact, children with attention deficit disorder are known to more likely to experience restless leg syndrome. [*Tohoku Journal Experimental Medicine*, 2007 Nov; 213(3):269-76] It has been found that men who regularly donate blood, and therefore deplete iron, are more likely to experience restless leg syndrome. [*Sleep Medicine*, 2007 Nov; 8(7-8):716-22]

Of course, the real cause of wavering mental function among growing children is likely to occur when red blood cell production can't keep up with growth spurts. In fact, the provision of 80 milligrams of supplemental iron among 23 non-anemic children, aged 5-8 years, produced dramatic improvement in an attention-deficit rating scale after 12 weeks of supplementation. [*Pediatric Neurology*, 2008 January; 38(1):20-6] Iron supplementation produced results comparable to stimulant drugs (like Ritalin) and more appropriately addresses the cause of the disorder.

Provision of iron supplements may present side effects, particularly nausea. Understanding the origin of iron deficiency may lead to a better understanding of how to resolve these commonly-experienced syndromes. Rather than reach for iron pills, one study showed that the provision of supplemental Vitamin C among iron-deficient individuals increased iron absorption by 270%. [*American Journal Clinical Nutrition*, 2008 Apr; 87(4):881-6] Vitamin C as ascorbic acid is much better tolerated and less problematic than iron pills. When anemia occurs, think of Vitamin C before iron pills.

◆ **SID and crib mattresses.** Sudden infant death is devastating. Its origins are elusive. Yet, researchers in Great Britain have conclusively shown that polyurethane foam mattresses used in infant cribs can accumulate proteins, probably from urine or spilled liquids, which then facilitate the growth of toxic bacteria. Waterproof mattress covers may be of benefit in the crib room. [*Journal Applied Microbiology*, 2008 Feb; 104(2):526-33]

◆ **Beware of heartburn medications that deplete magnesium.** It is estimated that 4 in 10 Americans are deficient in magnesium. This mineral shortage may be exacerbated by the use of heartburn medications – the so-called designer anti-acids (proton pump inhibitors like Losec, Prilosec, Nexium, Protonix, and Aciphex). [*Clinical Endocrinology (Oxf)*, 2008 Jan 23] The use of such drugs should be avoided, particularly because they are known to induce a rebound heartburn effect that makes individuals even more dependent upon the drug.

◆ **Effectiveness of OTC poison-oak/ivy remedies.** Poison oak and poison ivy release a very toxic oil known as urushiol. The tiniest amount can incapacitate an entire battalion of army troops navigating through dense woods. Soaps that dissolve the oil are helpful, but only if used immediately after exposure. Expensive remedies available in the drug store (Tecnu, Zanfel at $20-30 per tube) were found to be only marginally better than Dial soap or Goop, which are far less costly. The high-priced poison-oak/ivy remedies cost 18 times more than plain soap. [*International Journal Dermatology*, 2000 Jul; 39(7):515-8] It is more important to lather up immediately after skin exposure, and to throw clothing into the washing machine, than to wait till an expensive remedy can be purchased from the drug store.

◆ **Let them die.** "Modern" medicine's antagonism toward antioxidant supplements costs many people their lives. Profound oxidative stress occurs following severe injuries resulting in depletion of antioxidants such as Vitamin C, Vitamin E, and selenium. Supplemental antioxidants may reduce infection and organ dysfunction following injury or hemorrhage. Researchers put antioxidant supplementation to the test, providing high-dose intravenous antioxidants for seven days to patients admitted to a trauma center. Length of hospital stay and mortality (8.5% to 6.1%, a relative 28% reduction) were dramatically reduced. [*Journal Parenteral Enteral Nutrition*, 2008 Jul-Aug; 32(4):384-8] When will doctors order the administration of an intravenous bottle chock-full of antioxidants even before the patient reaches the hospital?

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> "We cannot expect the Americans to jump from capitalism to Communism, but we can assist their elected leaders in giving Americans small doses of socialism until they suddenly awake to find they have Communism."
>
> —Soviet Leader Nikita Khrushchev, 1959

Health Bits & Pieces

By Dan Kenner, Ph.D., LAc

◆ **Prostate Cancer & Vitamin K.** A recent study of 250 prostate cancer patients taking Vitamin K2 and 494 matched controls demonstrated that Vitamin K2 consumption may reduce the risk of advanced-stage and high-grade prostate cancer. Vitamin K2 is also known as menaquinone. [Nimptisch K et al., "Serum Undercarboxylated Osteocalcin as Biomarker of Vitamin K Intake and Risk of Prostate Cancer: A Nested Case-Control Study in the Heidelberg Cohort of the European Prospective Investigation into Cancer and Nutrition," *Cancer Epidemiol Biomarkers Prev.*, 1/09]

◆ **Green Tea and Exercise Reduce Belly Fat.** Many individuals have found abdominal fat to be the toughest to eliminate. Yet, a twelve-week-long study involving 132 adults showed that those study subjects who drank green tea catechins and engaged in moderate exercise lost more total abdominal fat and abdominal subcutaneous fat than did the control group that only drank the control beverage and engaged in moderate exercise. Green tea (*Camellia sinensis*) has long been known as a weight-loss aid, but the mechanism by which it acts is still not fully studied. [Maki KC et al, "Green Tea Catechin Consumption Enhances Exercise-Induced Abdominal Fat Loss in Overweight and Obese Adults," *J. Nutrition*, 2/09]

◆ **Breast Health through Healthy Living.** Healthy weight and low stress are two key factors in maintaining good breast health. In a pilot study of 647 women having a sister with breast cancer, researchers analyzed telomere length (the shorter the telomeres the less life theoretically remains). The National Institute of Health conducted the study as a precursor to a much fuller study of 50,000 women to determine how environmental and genetic factors could influence the onset of breast cancer. What they found was that obesity and feeling stressed can shorten telomere length and thereby accelerate the aging process. [Kim S, Parks CG, DeRoo LA., Chen, H, Taylor JA, Cawthon RM, Sandler DP, "Obesity and Weight Gain in Adulthood and Telomere Length," *Cancer Epidemiology Biomarkers & Prevention* 2009;18(3):816-20 March 2009; Parks CG, Miller DB, McCanlies EC, Cawthon RM, Andrew ME, DeRoo LA, Sandler, DP. "Telomere Length, Current Perceived Stress, and Urinary Stress Hormones in Women," *Cancer Epidemiology Biomarkers & Prevention* 2009; 18(2): 551-560. February 2009]

◆ **Sunscreens Block Vitamin D Production in Skin.** Vitamin-D deficiency has garnered the attention of leading scientific and public health organizations. *The Archives of Internal Medicine* has reported that over 75% of Americans have Vitamin-D insufficiency. [*Archives of Internal Medicine*, 2009;169(6):626-632] And last Fall, the American Public Health Association called Vitamin-D deficiency/insufficiency "a major public health concern for both children and adults in the United States." [*See http://www.apha.org/advocacy/policy/policysearch/default.htm?id=1367*] Yet, nearly 64% of Americans surveyed are unaware that sunscreen hinders the body's ability to produce Vitamin D – a nutrient found to support the immune system, bone strength, and colon health, amongst many other things. [Wellesse survey 2009]

◆ **Metabolic Syndrome & Vitamin D.** Metabolic syndrome, also known as pre-diabetes, is more likely to occur in people with low serum levels of Vitamin D according to a recent study. The lower a person's level of serum Vitamin D is, the higher the prevalence of developing metabolic syndrome according to a new study. Vitamin D, which is fat-soluble, can be stored in fatty tissue and thus made unavailable in the blood where it is physiologically active. [Maki KC, MR Rubin MR, LG Wong, JF McManus, CD Jensen, JW Marshall, A Lawless, "Serum 25-hydroxyvitamin D is independently associated with high-density lipoprotein cholesterol and the metabolic syndrome in men and women," *Journal of Clinical Lipidology* , 21 July 2009 (10.1016/j.jacl.2009.07.003)]

◆ **Curcumin & Breast Tumors.** Curcumin, the active ingredient and pigment in the herb turmeric, decreases

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"The analogy I use is like my car's not running very well, so I'm going to ignore the engine which is the Sun and I'm going to ignore the transmission which is the water vapor and I'm going to look at one nut on the right rear wheel which is the human produced CO2. The science is that bad."

The last word goes to former environmentalist Paul Driessen, who observes that, "The theory of man-made global warming is now so firmly entrenched, the voices of opposition so effectively silenced, it seems invincible, untroubled by any contrary evidence, no matter how strong. The global warming alarm is now beyond reason." He then adds that, "There will still be people who believe that this is the end of the World particularly when you have, for example, the chief scientist of the UK telling people that by the end of the Century the only habitable place on the Earth will be the Antarctic. And humanity may survive thanks to some breeding couples who moved to the Antarctic. I mean this is hilarious. It would be hilarious actually if it weren't so sad. We imagine we live in an age of reason and the global warming alarm is dressed up as science but it's not science, it's propaganda."

The problem, though, is not scientific. When apparently-authoritative scientists stand up and make claims, supported by a rent-seeking media, people tend to believe them. Moreover, because such claims invariably support the interventionist tendencies of governments and politicians, there is a natural bias towards accepting that which legitimizes the intervention. This is what is known as the beneficial crisis. With no countervailing force, we get the build-up of a scare dynamic, which then dominates public policy even (or especially) where the scientific foundation is hopelessly flawed.

In the fullness of time, the scare will dissipate – scares always do – leaving a trail of wreckage behind it. Looking back, we will view the claims of pending Armageddon with amused puzzlement, wondering how people could have been so stupid as to have accepted such crazy alarms.

By then, of course, we will all have moved on to yet another scare, and another, each of which will have seemed every bit as plausible and rational as did global warming at the time. But each time we will have forgotten how easily we were gulled by that which we now deride, and each time Mankind emerges the poorer.

Richard North is the co-editor of EU Referendum, watched this documentary, and has graciously shared this review with us that was originally written for Pajamas Media but also found on the Dutch libertarian website www.vrijspreker.nl. See also http://www.littlegreenfootballs.com/weblog/?entry=24760_The_Great_Global_Warming_Swindle&only. From http://www.vrijspreker.nl/wp/2007/03/the-great-global-warming-swindle/.

Health Bits and Pieces

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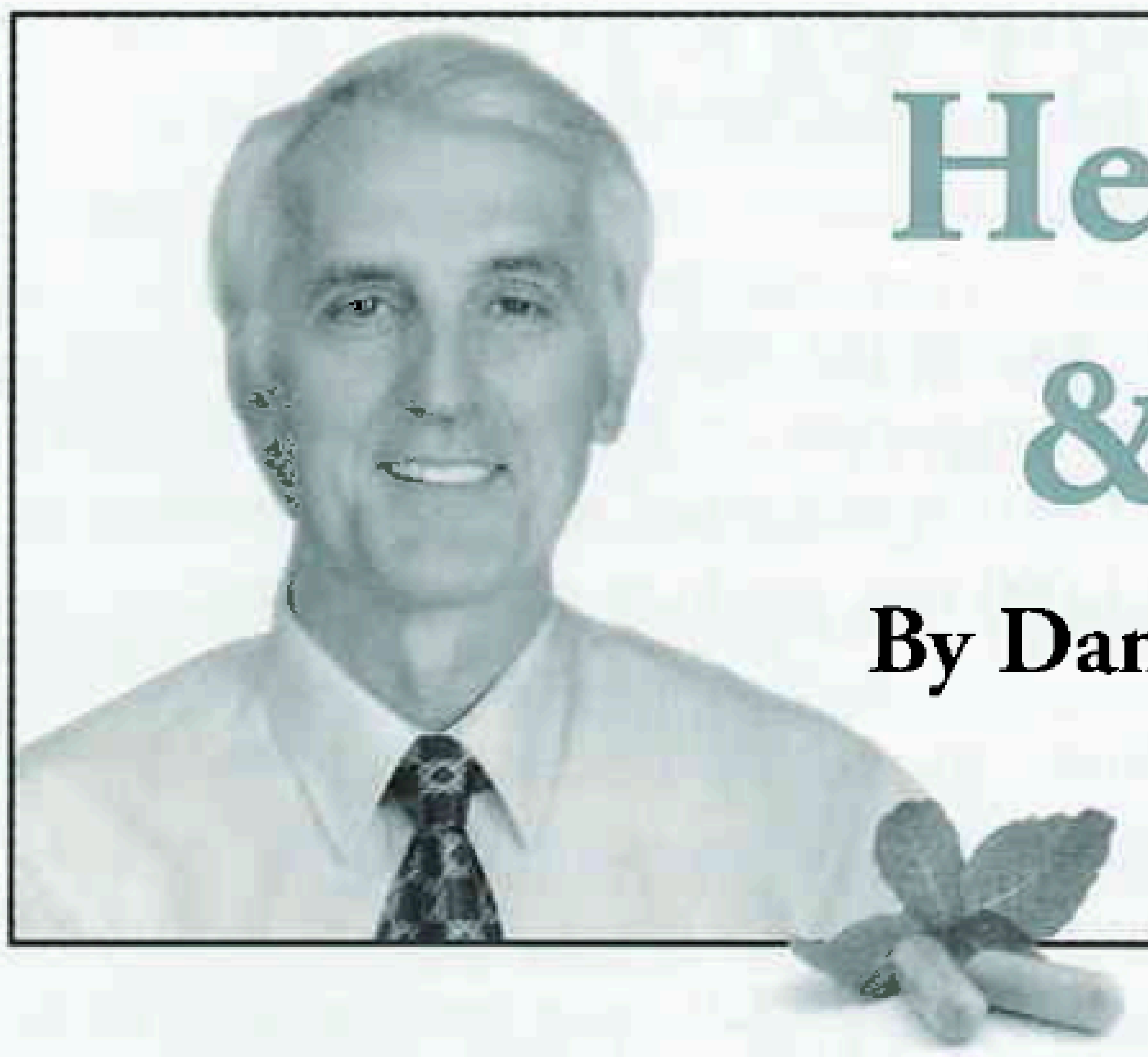
the risk of developing progestin-accelerated breast tumors in post menopausal women who have received hormone replacement therapy (HRT). Curcumin has shown that it can inhibit the secretion of VEGF (vascular endothelial growth factor), which helps create the blood vessels that supply tumors with nutrients, in breast cancer cells. This counteracts the effect of hormones such as progestin, used in HRT, which are known to increase production of VEGF. [Carroll CE, I Benakanakere, B Besch-Williford, MR Ellersieck, SM Hyder, "Curcumin delays development of medroxyprogesterone acetate-accelerated 7,12-dimethylbenz[a]anthracene-induced mammary tumors," *Menopause*, 22 July 2009 doi: 10.1097/gme.0b013e3181afcce5]

◆ **Vitamin D3 & Curcumin Remove Amyloid Proteins.** Vitamin D3 and curcumin in combination may also help eradicate amyloid protein plaques associated with Alzheimer's disease. In Alzheimer's Type 1 patients, who respond to curcuminoids, immune cells called macrophages are activated to clear out the amyloid proteins that are thought to cause the brain degeneration. [Masoumi A, B Goldenson, S Ghirmai, H Avagyan, J Zaghi, K Abel, X Zheng, A Espinosa-Jeffrey, M Mahanian, PT Liu, M Hewison, M Mizwicki, J Cashman, M Fiala, "1,25-dihydroxyvitamin D{3} Interacts with Curcuminoids to Stimulate Amyloid Clearance by Macrophages of Alzheimer's Disease Patients," *Journal of Alzheimer's Disease*, 2009 Volume 17(3): 703-717. 10.3233/JAD-2009-1080]

◆ **Green Tea Reduces Blood & Lymph Cancers.** Green tea consumption may reduce the risk of blood and lymph-based cancers by about 50 per cent. Five cups of green tea a day appears to reduce blood-borne malignancies by 42% with a 48% reduction in risk of lymph-related cancers. EGCG, short for epigallocatechin gallate, is the antioxidant associated with its cancer preventive and immune-protection properties. [Naganuma T, Kuriyama S, Kakizaki M, Sone T, Nakaya N, Ohmori-Matsuda K, Hozawa A, Nishino Y, Tsuji I, "Green Tea Consumption and Hematologic Malignancies in Japan," *American Journal of Epidemiology*, doi:10.1093/aje/kwp187. Advance Access published online on July 29, 2009]



Health Bits & Pieces

By Dan Kenner, Ph.D., LAc

◆ **Keep Your Sunny Side Up: Depression and Cardiovascular Risk.** The relationship between depression and cardiovascular problems is well established, but does one cause the other? If so, which is the cause? A recent study has demonstrated that depression may trigger inflammatory processes that can lead to cardiovascular health problems. Individuals with depressive disorders have been found to have higher levels of blood inflammatory markers such as c-reactive protein and interleukin 6 (IL-6), which are known risk factors for coronary heart disease and other cardiovascular disorders. [Stewart JC, Rand KL, et al., "A prospective evaluation of the directionality of the depression-inflammation relationship," *Brain, Behavior, and Immunity* 2009; 23(7): 936-944]

◆ **Keep Your Sunny Side Up Part II: Vitamin D for the Prostate.** Vitamin D is produced from cholesterol by exposure of the skin to the Sun. Many of us who are deficient, especially during Fall and Winter months, need to supplement. Vitamin D is actually an anti-inflammatory steroid that has been studied for its preventive and healing properties for a vast range of afflictions. A recent study in the U.K. showed that Vitamin-D therapy significantly reduced PSA levels during 3 months of administration in 20% of advanced or metastatic prostate cancer patients studied. [Newsom-Davis TE, Kenny LM, et al., "The promiscuous receptor," *British Journal of Urology* 2009; 104(9): 1204-1207]

◆ **Omega-3s Can Prevent Stroke.** Fish oil, rich in anti-inflammatory omega-3 fatty acids, may have stroke-preventive properties. A study of carotid arterial plaque in neurologically symptomatic patients showed a deficiency of omega-3 fatty acids leading researchers to suggest that EPA and DHA, omega-3 fatty acids found in fish oil, may prevent stroke and reduce risk associated with medical interventions in the carotid artery. [Bazan HA, Lu Y, et al., "Diminished omega-3 fatty acids are associated with carotid plaques from neurologically sensitive patients: Implications for carotid interventions," *Vascular Pharmacology* 2009; 51(5-6): 331-336]

◆ **More Good News on Green Tea.** New evidence shows that green tea polyphenols, also known as EGCG, not only prevent cancer but can be used to treat it as well. Clinical research at the M. D. Anderson Cancer Center in Houston, Texas showed that 36% patients with high-risk premalignant oral lesions had a beneficial clinical response to a dose of green tea extract compared to 18% using a placebo. [Tsao AS, Liu D, et al., "Phase II Randomized Placebo-controlled Trial of Green Tea Extract in Patients with High-Risk Oral Pre-malignant Lesions," *Cancer Prevention Research* 2009; 2: 931] A standardized extract from green tea has also been found to have a beneficial therapeutic effect on chronic lymphocytic leukemia (CLL), a type of leukemia in which white blood cells called lymphocytes increase in number causing lymph nodes to swell. In a clinical trial at the Mayo Clinic, over one-third of the patients using the green tea extract had reduced lymph node swelling and one-third experienced at least a 20% decrease in the lymphocyte count. [Shanafelt TD, Call TG, et al., "Phase I trial of daily oral Polyphenon E in patients with asymptomatic Rai stage 0 to II chronic lymphocytic leukemia," *Journal of Clinical Oncology* 2009; 27: 3808-3814]

◆ **Influenza Treatment News.** During the Avian flu scare, Chinese health officials encouraged people to use traditional Chinese herbal formulas to treat the disease. A meta-analysis of eleven studies with over 2000 patients showed that traditional Chinese herbal formulas were more effective for flu symptoms than conventional antiviral and antipyretic drugs. [Chen XY, Wu TX, et al., "Chinese medicinal herbs for influenza," *Cochrane Database Systematic Review*, 2005, CD004559] Guidance of a health-care provider familiar with Chinese herbs is recommended. In two randomized trials with 198 nursing home residents, a daily 200 mg dose of ginseng reduced the risk of respiratory infections by 89% compared to a placebo. Only 1 out of 97 of the people taking ginseng suffered an infection. [McElhaney JE, Gravenstein S, et al., "A placebo-controlled trial of a proprietary extract of North American ginseng (CVT-E002) to prevent acute respiratory illness in institutionalized older adults," *Journal of the American Geriatrics Society*, 2004; 52(1): 13-19] A study in Hong Kong concluded that moderate exercise substantially reduces severity of symptoms and mortality from influenza. [Wong CM, Lai HK, et al., "Is exercise protective against influenza-associated mortality?" *PLoS One*, 2008; 3(5): e2108]

Health Bits & Pieces

By Dan Kenner, Ph.D., LAc

◆ **Liver shutdown.** The popular cholesterol-lowering drugs collectively known as the "statins" have well-noted adverse effects on liver function. They lower blood cholesterol by inhibiting cholesterol synthesis in the liver, a natural and vital function. Hormones like progesterone, estrogen, and testosterone are all made from cholesterol in the liver, so the synthesis of hormones and other essential resources is also inhibited. Production of coenzyme Q-10 (Co Q-10) is also affected. CoQ-10 is a key factor in maintaining heart health and has also been found to have cancer preventive properties; it also lowers blood pressure, prevents periodontal disease and slows the progression of Parkinsonism. Since CoQ-10 and cholesterol are both synthesized from the same substance in the liver, statin drugs also inhibit the body's synthesis of coenzyme Q-10. Taking statins can decrease the body's synthesis of coenzyme Q-10 by as much as 40%. [Ghirlanda, et al., "Evidence of plasma CoQ10-lowering effect of HMG-COA reductase inhibitors: a double-blind, placebo-controlled study," *Journal of Clinical Pharmacology*, 1993 Mar; 33(3):226-229.]

◆ **And no warning label.** Statins are known to cause muscle pain and even wasting away of muscle tissue (rhabdomyolysis). Another study showed that statin-associated muscle pain is actually caused by muscle damage resulting from statin use. Researchers at the Jewish Hospital of Cincinnati suggested that low Vitamin-D levels might play a role in this muscle damage. The research team administered high doses of Vitamin D to about 80 statin users who had reported muscle pain. Muscle pain was completely relieved in over 90 percent of the patients taking Vitamin D versus a placebo. It may be that statins not only deplete the body of coenzyme Q-10 and production of important hormones, but perhaps Vitamin D levels as well. If so, the potential to rob the body of Vitamin D may turn out to be a significant drawback of statin use. [Ahmed W, Khan N, Glueck C, et al., "Low serum 25 (OH) vitamin D levels (,32 ng/mL) are associated with reversible myositis-myalgia in statin-treated patients," *Translational Research*, 2009;153:11–16).]

◆ **But no heart disease.** A meta-analysis is a study of research studies in an attempt to get a larger view and to attempt to resolve conflicting research results. Researchers analyzed 13 large statin clinical trials to compare rates of type 2 diabetes among statin users compared to placebo groups. They concluded that one new case of type 2 diabetes would develop out of every 255 patients who had been treated with statins for four years. That could mean that as many as 80,000 people who take statins will develop or already have developed diabetes as a side effect. [Sattar N, Preiss D, Murray H, et al., "Statins and Risk of Incident Diabetes: A Collaborative Meta-Analysis of Randomised Statin Trials," *The Lancet*, Volume 375, Issue 9716, Pages 735-742, 27 February 2010.]

◆ **Other statin effects.** Researchers at Tufts University School of Medicine concluded the risk of cancer is significantly associated with lower achieved LDL-C (low density lipoprotein cholesterol) levels. Furthermore, the cardiovascular benefits of low achieved levels of LDL-C may in part be offset by an increased risk of cancer. [Alsheikh-Ali A, Maddukuri P, Karas R, "Effect of the Magnitude of Lipid Lowering on Risk of Elevated Liver Enzymes, Rhabdomyolysis, and Cancer Insights From Large Randomized Statin Trials," *Journal of the American College of Cardiology*, 2007; 50:409-418.] Other adverse effects of statins identified in a study published in the British Medical Journal, include liver problems, acute kidney failure, muscle weakness and cataracts. [Hippisley-Cox J, Coupland C, "Unintended effects of statins in men and women in England and Wales: population based cohort study using the QResearch database," *British Medical Journal*, 2010 May 20;340:c2197.]

◆ **Heart healthy despair.** The contemporary medical and Big Pharma preoccupation with lowering cholesterol is itself a subject of controversy. An informed body of medical opinion does not accept that high cholesterol is a significant risk factor in cardiovascular disease. But lowering cholesterol by the use of statins is now considered the standard of care and is commonly used in clinical practice. There are some risks associated with lowering cholesterol, however. Low levels of LDL cholesterol are being associated with a significantly increased risk of developing depression in men. [Ancelin M, Carrière I, Boulenger J, et al., "Gender and Genotype Modulation of the Association Between Lipid Levels and Depressive Symptomatology in Community-Dwelling Elderly (The ESPRIT Study)," *Biological Psychiatry*, 2010 Jul 15;68(2):125-32. Epub 2010 May 26.]

◆ **The fruit salad and bean cure.** The most dangerous risk factor is thromboses, or blood clots from inflammation, especially from arterial plaque. A safe and effective way to treat and prevent thrombotic disease, which includes strokes and heart attacks, is to use proteolytic enzymes: enzymes that dissolve protein, in particular fibrin, which binds blood clots into a mass formation. Bromelain and papain, from the tropical fruits pineapple and papaya, respectively have been used therapeutically in Germany for over 50 years. Nattokinase, from the Japanese fermented soybean food *natto*, has also been tested extensively and shown to dissolve fibrin. [Metzig C, "Bromelain proteases reduce human platelet aggregation *in vitro*, adhesion to bovine endothelial cells and thrombus formation," In Vivo, 13(1):7-12 1999 Jan-Feb; Suzuki Y, Kondo K, Matsumoto Y, et al., " Dietary supplementation of fermented soybean, natto, suppresses intimal thickening and modulates the lysis of mural thrombi after endothelial injury in rat femoral artery," *Life Science* 2003; 73:1289-98.]

◆ **But it gives them bulimia.** A recent study showed that astaxanthin, a dark-red pigment found in small crustacean krill and some types of algae, significantly improves cardiovascular function in mouse models. [Nakao R, Nelson L, Park J, et al., "Effect of astaxanthin supplementation on inflammation and cardiac function in BALB/c mice," *Anticancer Research*, 2010 Jul;30(7):2721-2725.]

Health Bits & Pieces

By Dan Kenner, Ph.D., LAc

◆ **Chemotherapy Spreads Cancer.** The chemotherapy drug Taxol causes cancer cell "micro-tentacles" to grow longer and tumor cells to reattach to a new site more rapidly. If treated with taxol before surgery to shrink the primary tumor, the number of circulating tumor cells increases by a factor of 1,000 to 10,000. This can potentially increase the likelihood of metastasis. Researchers at the University of Maryland Marlene and Stewart Greenebaum Cancer Center have discovered that these "microtentacles" appear to play a vital role in how cancer cells spread to distant locations in the body. For the reasons mentioned above, the research team found the popular chemotherapy drug to be counter-productive. [University of Maryland Medical Center (2010, March 15), "Microtentacles' on tumor cells appear to play role in how breast cancer spreads," *Science Daily*, retrieved September 5, 2010, from ***http://www.sciencedaily.com***]

◆ **Biopsy Can Spread Cancer.** Needle biopsies are widely used and accepted as a safe and reliable diagnostic procedure for cancer. New research indicates that they may not be so safe after all. The technique may cause malignant cells to break away from a tumor and spread to other areas of the body. A study at the John Wayne Cancer Institute indicates that a needle biopsy of a breast tumor may increase the chance of metastasis by 50% compared to patients who received lumpectomies. Other research reported in the *British Medical Journal* suggests that the procedure is equally dangerous for needle biopsy of malignant liver cells. [Hansen N, Xing Y, Grube B, Giuliano A, "Manipulation of the Primary Breast Tumor and the Incidence of Sentinel Node Metastases From Invasive Breast Cancer," *Archives of Surgery* 2004;139:634-640; Metcalfe M, Bridgewater F, Mullin E, Maddem G, "Lesson of the week: Useless and dangerous—fine needle aspiration of hepatic colorectal metastases," *British Medical Journal* 2004;328:507-508 doi:10.1136/bmj.328.7438.507 (Published 26 February 2004)]

◆ **Pain Killers Spread Cancer.** Opiate-based painkillers can stimulate the growth and spread of cancer cells according to a growing body of research. It was first noticed in a 2002 clinical trial wherein patients who received spinal rather than systemic pain relief had a longer survival time. Morphine has also been found to directly accelerate tumor-cell proliferation and inhibit the immune response in laboratory cell line studies. Researchers at the University of Chicago Medical Center found that opiates also promote angiogenesis, new blood-vessel growth that brings nutrients to sustain cancer cell growth. Increased angiogenesis also helps cancers thrive in a new location. [University of Chicago Medical Center (2009, November 19). "Common pain relief medication may encourage cancer growth," *Science Daily*, retrieved September 5, 2010, from ***http://www.sciencedaily.com/releases/2009/11/091118143209.htm***]

◆ **Radiation Treatment Damages the Bones.** The discovery at Clemson University that a single therapeutic dose of radiation can cause appreciable bone loss has shocked the medical world. This can lead to the eventual development of osteoporosis, bone necrosis (bone death,) or bone cancer may develop. A dose of only two Gy (two gray, a radiation dosage formerly designated as 200 rads), administered to mice destroyed between 29 and 39 percent of their interior bone mass. It was known that radiation caused some bone loss and patients were put at a greater risk of fractures, but it was not known that a single dose of radiation could trigger such extensive bone loss. Chemotherapy (often given with radiation) can also cause bone loss. The additive effects of radiation and chemotherapy upon a patient could be significantly more damaging. [Hamilton S, Travis J, Willey J, Bateman T, "A murine model for bone loss from therapeutic and space-relevant sources of radiation," Department of Bioengineering, Clemson University, Clemson, South Carolina; M.J. Pecaut, D.S. Gridley and G.A. Nelson, Department of Radiation Medicine, Loma Linda University and Medical Center, Loma Linda, California, appears in the online edition of the *Journal of Applied Physiology*, published by The American Physiological Society; University of Montreal (November 17, 2008). *See also* "Cancer Treatment May Result In Bone Loss, Study Finds," *Science Daily*, retrieved September 5, 2010, from ***http://www.sciencedaily.com /releases/2008/11/081113140425.htm***]

◆ **Go Figure.** THC (tetrahydrocannibinol), the active ingredient in marijuana, cuts tumor growth in half and significantly reduces the possibility of metastasis in lung cancer, according to researchers at Harvard University, who tested the chemical in both lab and animal studies. The only previous clinical trial testing THC as a treatment against cancer growth was a recently completed British pilot study in human glioblastoma, a type of brain cancer. The researchers also speculated that THC may also inhibit angiogenesis, which would therefore interfere with cancer growth. The researchers cautioned that some animal studies have shown that THC can stimulate certain types of cancer and further research is necessary. [American Association for Cancer Research (2007, April 17), "Marijuana Cuts Lung Cancer Tumor Growth In Half, Study Shows," *Science Daily*, retrieved September 5, 2010, from ***http://www.sciencedaily.com / releases/2007/04/070417193338.htm***]

◆ **Industrial Food Additives Can Promote Cancer Development.** The number-one cause of cancer deaths in the World is lung cancer. Although smoking is known to cause 90% of lung cancers, only about 8% of smokers actually develop the disease. Like many forms of cancer, there is subset of the population that is genetically predisposed to lung cancer. New research indicates that inorganic phosphates, which are added to processed foods, especially meats, seafood, cheese and bakery products to preserve flavor and texture, may add to the effects of smoking and promote the development of the disease. The researchers also found that the activity of anti-cancer genes is reduced by these chemicals. This effect may not be limited specifically to lung cancer. Consumers should be aware that the amount of inorganic phosphates added to processed foods has more than doubled since the 1990s. [Jin H, Xu C-X, Lim H-T, et al., "High Dietary Inorganic Phosphate Increases Lung Tumorigenesis and Alters Akt Signaling," *American Journal of Respiratory and Critical Care Medicine* 179: 59-68, 2009]

Health Bits & Pieces

By Dan Kenner, Ph.D., LAc

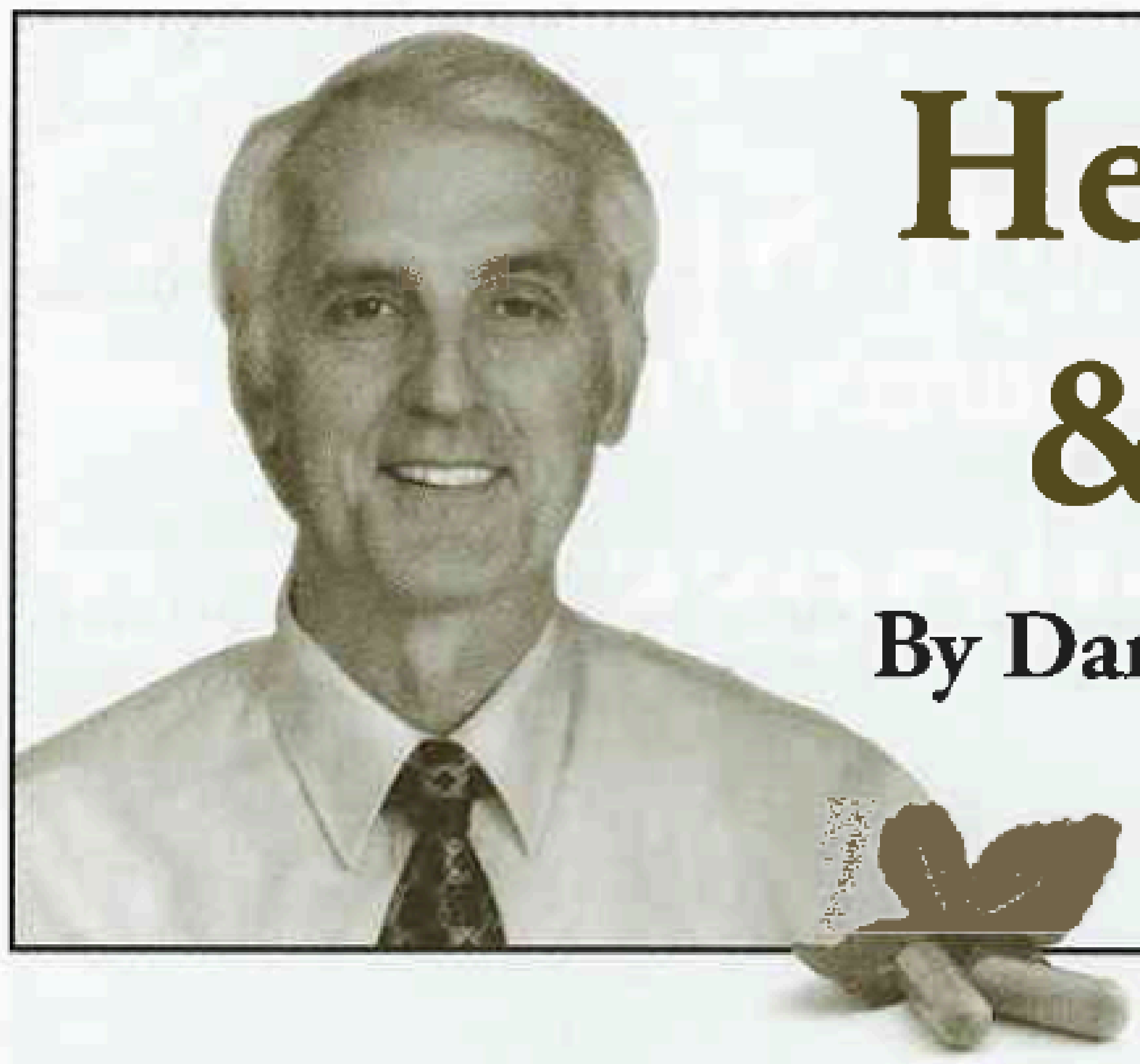
◆ **Radiation Exposure for Breast Cancer Protection.** The benefit of mammography in screening for breast cancer was questioned by a Danish study. Researchers at the Nordic Cochrane Institute in Copenhagen were "unable to find an effect of the Danish screening program on breast cancer mortality." The same conclusion has been reached by similar studies in other countries. A 2005 study suggested that screening had reduced breast cancer deaths by 25% in Copenhagen, but researchers Karsten Jørgensen and Peter Gøtzsche observed serious flaws in the study design that led to that conclusion and carried out a more comprehensive study. The researchers found that breast cancer mortality declined twice as much in non-screened areas and they suggested that the reductions in breast cancer mortality are probably better explained by changes in risk factors or improved treatment than by screening mammography. [Jørgensen KJ, Zahl P-H, Gøtzsche PC, "Breast cancer mortality in organised mammography screening in Denmark: comparative study," *British Medical Journal,* 2010;340:c1241.]

◆ **Good News about Happiness.** Medical researchers at Wayne State University conducted research that correlates "smile intensity" with longevity. Photographs of baseball players taken in the 1940s and 1950s were rated by independent reviewers according to a smile-rating scheme. The reviewers did not know the purpose of the study. The conclusion was that there exists a strong link between smile intensity and longevity. The average lifespan of non-smilers was 72.9 years, for smilers it was 75, and big-smilers 79.9. [Abel EL, Kruger ML, "Smile Intensity in Photographs Predicts Longevity," *Psychological Science*, April 2010, 21(4): 542-544.]

◆ **Latest News about Happiness and Dr. Feelgood.** The news has been out for years that prescription drugs are a leading cause of death. High-profile cases of prescription drug poisoning in celebrities like Michael Jackson and Heath Ledger have raised awareness of the hazards, but not about the scope of the problem. A new study shows that in the U.S. hospitalizations for poisoning by prescription opioids, sedatives, and tranquilizers increased a total of 65% between 1999 and 2006. This increase is twice the increase observed in hospitalizations for poisoning by other drugs and substances. [Coben JH, Davis SM, Furbee PM, *et al*, "Hospitalizations for Poisoning by Prescription Opioids, Sedatives, and Tranquilizers," *American Journal of Preventive Medicine*, May 2010; 38(5): 517-524.]

◆ **Childhood Immunization.** Researchers in Japan studied the effects of Vitamin-D supplementation in prevention of influenza A in school children in a randomized, double-blind, placebo-controlled trial that compared Vitamin D_3 supplements (1200 IU/d) with a placebo. Influenza A occurred in 18 of 167 (10.8%) children in the Vitamin D_3 group compared with 31 of 167 (18.6%) children in the placebo group. The Vitamin-D supplementation also appeared to reduce the incidence of asthma attacks. [Urashima M, Segawa T, Okazaki M, *et al*, "Randomized trial of vitamin D supplementation to prevent seasonal influenza A in schoolchildren," *American Journal of Clinical Nutrition*, March 10, 2010; doi:10.3945/ajcn.2009.29094.]

◆ **Beta Amyloid Proteins and Your Health.** Japanese researchers may have developed a test that would detect Alzheimer's disease in its early stages. High levels of beta amyloid protein aggregates detected in the spinal fluid are a likely indicator of Alzheimer's disease development. They showed a direct correlation with high levels of this chemical indicator with confirmed cases of Alzheimer's. Intermediate levels showed some cognitive impairment and low levels with no symptoms of the disease. Other research in early warning for Alzheimer's may result in an eye examination that can help diagnose Alzheimer's at early stages. Lee E. Goldstein, M.D., Ph.D., Assistant Professor of Psychiatry and the Director of the Molecular Aging and Development Laboratory at the Brigham and Women's Hospital in Boston, injects the eye with special drops that bind to the amyloid beta proteins. Under an infrared light, the proteins will fluoresce, indicating the presence of Alzheimer's disease. [Fukumoto H, Tokuda T, Kasai T, et al, High-molecular-weight ⊠-amyloid oligomers are elevated in cerebrospinal fluid of Alzheimer patients. *FASEB Journal*, 2010; DOI: *10.1096/fj.09-150359*.]



Health Bits & Pieces

By Dan Kenner, Ph.D., LAc

◆ **Electromagnetic Hazards.** The safety of new wireless technologies like Wi-Fi and cell phones is evaluated by standards that are obsolete, based on a plethora of studies on the effects of electromagnetism on health. Old safety standards consider radiation to be safe if it is not ionizing like X-rays and nuclear radiation, or heat-producing like microwaves. Accumulating research evidence shows that these standards are far behind scientific progress in understanding effects of extremely low frequency (ELF) and radio frequency (RF) radiation on health. Some of the most serious disorders associated with ELF and RF exposures include childhood and adult leukemia, childhood and adult brain tumors, and increased risk of the neurodegenerative diseases such as Alzheimer's and amyotrophic lateral sclerosis (ALS). There are also reports of increased risk of breast cancer, pathological leakage of the blood-brain barrier, altered immune function including increased allergic and inflammatory responses, miscarriage, and some cardiovascular effects and sleep disruption. [C. Sage, D.O. Carpenter, "Public health implications of wireless technologies," *Pathophysiology* (2009), doi:10.1016/j.pathophys.2009.01.011]

◆ **And Then Some.** The risk of developing malignant glioma, a type of brain cancer, is doubled in individuals that have used a mobile phone for 10 or more years, with the risk being elevated only on the side of the head on which the phone is used. The risk seems to be even greater in children. There is 5.2-fold elevated risk in children who begin use of mobile phones before the age of 20 years after even just 1 or more years of use, whereas for all ages the odds ratio was 1.4. This is over three times the risk of cancer development compared to adults. [L. Hardell, M. Carlberg, F. Söderqvist, K. Hansson Mild, "Meta-analysis of long-term mobile phone use and the association with brain tumours," *International Journal of Oncology* 32 (2008) 1097–1103; L. Hardell, M. Carlberg, K. Hansson Mild, "Pooled analysis of two case-control studies on use of cellular and cordless telephones and the risk for malignant brain tumours diagnosed in 1997–2003," *International Archives of Environmental Health* 79 (2006) 630–639, doi:10.1007/s00420-006-0088-5]

◆ **Get Off Your Prostate and Exercise!** A man's risk of prostate cancer decreases in proportion to the amount of exercise he engages in. Men who reported more hours per week of exercise were significantly less likely to have cancer on biopsy. Investigators from Duke University at the Durham Veterans Affairs Medical Center found that men who regularly engaged in moderate activity – anything equivalent to walking at a moderate pace for several hours per week – were significantly less likely to be diagnosed with prostate cancer. If they did develop prostate cancer, it was more likely to be a less-virulent form of the disease. [Duke Medicine, news release, Sept. 22, 2009 at *http://www.cancer.duke.edu/modules/news/article.php?storyid=219*]

◆ **Health Benefits of Bad Breath.** A substance found in garlic has significant cancer-preventive as well as anti-fungal properties. Ajoene, which is a metabolite of the pungent garlic component allicin, triggers the destruction of cancer cells. Ajoene also has significant anti-fungal properties against *Candida albicans* and a variety of other types of fungus. [Kaschula CH, Hunter R, Parker MI. Garlic-derived anticancer agents: Structure and biological activity of ajoene. *Biofactors* 2010 Jan;36(1): 78-85; Carrero S, Romero H, Apitz-Castro R., "In vitro inhibitory effect of ajoene on Candida isolates recovered from vaginal discharges," *Revista Iberoamericana de Micologia* 2009 Sep 30;26(3): 189-193]

◆ **Fatigue Syndrome Marker.** Chronic fatigue sufferers may have a deficiency of Coenzyme Q-10 (CoQ-10). Patients diagnosed with myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS) may have a deficiency of Coenzyme Q-10. Symptoms such as fatigue and autonomic and neurocognitive symptoms in patients with ME/CFS may be caused by CoQ10 depletion. CoQ-10 is already known to have significant beneficial properties for cardiovascular health, cancer prevention, and even cancer treatment. It is known that low levels of CoQ-10 can result in development of cardiovascular disease, which could explain the reduced lifespan of people afflicted with chronic fatigue syndrome. Results of recent research suggest that patients with ME/CFS would benefit from CoQ10 supplementation. [Maes M, Mihaylova I, Kubera M, et al, "Coenzyme Q10 deficiency in myalgic encephalomyelitis / chronic fatigue syndrome (ME/CFS) is related to fatigue, autonomic and neurocognitive symptoms and is another risk factor explaining the early mortality in ME/CFS due to cardiovascular disorder," *Neuroendocrine Letters* 2009;30(4): 421-551]

Health Bits and Pieces (HFN 37:4)

By Dan Kenner

Gut Bacteria and Depression

The link between gut bacteria and mental health has been validated, offering support to the notion that intestinal microbes can affect mood. Researchers in Belgium have developed the first catalog of human gut bacteria that have "neuroactive" potential. Data analyzed from 1054 individuals enrolled in the Flemish Gut Flora Project (FGFP) revealed that two groups of bacteria, *Coprococcus* and *Dialister*, were consistently depleted in people diagnosed with depression, regardless of any type of antidepressant treatment. The results were validated in a cohort of 1063 individuals from the Dutch LifeLines DEEP cohort and in another group of patients with treatment-resistant major depressive disorder. Some bacteria were found to have a wide range of activity. *Coprococcus* bacteria, as well as *Faecalibacterium*, were also associated with higher quality of life indicators. Both of these bacteria produce butyrate, a short-chain fatty acid that reinforces the mucous membranes and reduces inflammation. Both bacteria have been reported to be depleted in depression and inflammatory bowel disease. Some of these types of bacteria have also been found to influence brain neurotransmitters, such as dopamine and GABA.

Valles-Colomer M, Falony G, Darzi Y, et al., "The neuroactive potential of the human gut microbiota in quality of life and depression," Nature Microbiology*, 4, 623-632 (2019), doi:10.1038/s41564-018-0337-x.*

Saffron for ADHD

The culinary and medicinal herb saffron (*Crocus sativus* L*)* has been found to have therapeutic properties in cases of depression and Alzheimer's disease. A recent randomized, double-blind trial at Tehran University of Medical Sciences in Iran, compared the efficacy and safety of saffron capsules with Methylphenidate (Ritalin) for attention deficit hyperactivity disorder (ADHD) in a group of outpatient children, ages 6-17 years. The research suggested that saffron was as effective as Ritalin in treating symptoms of ADHD in the children. Ritalin, a prescription drug used for the treatment of ADHD in children, has numerous undesirable secondary effects such as anxiety, nervousness, agitation, insomnia, and various symptoms of digestive discomfort. The investigators found there were no significant differences in efficacy or adverse events in the saffron versus the Ritalin group in a randomized 6-week trial. Shahin Akhondzadeh, Ph.D., FBPh.S, D.Sc., professor of clinical Psychopharmacology at the Roozbeh Psychiatric Hospital, Tehran University of Medical Sciences, explained, "The main point is that we can consider saffron as an alternative [to stimulants] in patients with ADHD."

Wang Y, Han T, Zhu Y, Zheng C, Ming Q, Rahman K & Qin L, "Antidepressant properties of bioactive fractions from the extract of Crocus sativus L," Journal of Natural Medicine*, 2010;64(1):24-30; Akhondzadeh S, Sabet M, Harirchian M, et al., "A 22-week, multicenter, randomized, double-blind controlled trial of Crocus sativus in the treatment of mild-to-moderate Alzheimer's disease,"* Psychopharmacology*, 2010;207:637-43; Baziar S, Aqamolaei A, Khadem E, et al., "Crocus sativus L. Versus Methylphenidate in Treatment of Children with Attention-Deficit/ Hyperactivity Disorder: A Randomized, Double-Blind Pilot Study,"* Journal of Child and Adolescent Psychopharmacology*, 2019 Apr;29(3):205-212, doi: 10.1089/cap.2018.0146, Epub 2019 Feb 11.*

Bright Light Therapy for Bipolar Disorder

Light-box therapy has been used for decades for the treatment of the Winter depression syndrome known as seasonal-affective disorder (SAD). The use of bright lights may also benefit other types of depression, even bipolar depression and treatment-resistant depression. Researchers at Northwestern University conducted a 6-week randomized double-blind placebo-controlled trial to investigate the efficacy of adjunctive bright-light therapy at midday for bipolar depression. The purpose of the study was to determine changes in symptom level, rate of mood polarity, sleep quality, and remission rate in depressed adults with bipolar I or II disorder who were receiving anti-manic medication. Patients were randomly assigned treatment with either 7,000-lux bright white light or 50-lux dim red placebo light. Compared with the placebo light group, the group treated with bright white light experienced a significantly higher remission rate (68.2% compared with 22.2% at weeks 4-6) and significantly lower depression scores (9.2 [SD=6.6] compared with 14.9 [SD=9.2]). No mood polarity switches were observed.

Another study showed that light exposure worked faster than taking antidepressants; in seasonal affective disorder it took 4-6 weeks or longer for an antidepressant to have an effect but light could reduce symptoms of depression within two weeks. Patients located in rooms facing southeast, which received the most light, were discharged an average of 30 days earlier than in rooms facing northwest.

Sit D, McGowan J, Wiltrout C, et al., "Adjunctive bright light therapy for bipolar depression: a randomized double-blind placebo-controlled trial," American Journal of Psychiatry, *2018;175(2): 131-139; Park M, Chai C-G, Lee H-K, Moon H, Noh J, "The Effects of Natural Daylight on Length of Hospital Stay,"* Environmental Health Insights, *2018; 12.117863021881281, 10.1177/1178630218812817.*

Vibrant Bowel Movements

Satish Rao, M.D., Ph.D., a gastroenterologist at Augusta University Medical Center, and his colleagues studied a vibrating capsule, called "Vibrant Capsule" (VC), to determine its effect on bowel movements. The vibration is thought to stimulate movement of the smooth muscle of the bowel to activate peristalsis, the natural undulatory motion of the gastrointestinal tract. The research team enrolled patients with chronic idiopathic constipation into one of two double-blind, sham-controlled trials that used two different models of VC activation. In the first trial, patients underwent a single vibration session; in the second, the patients underwent multiple vibration sessions. Both groups recorded bowel symptoms over the course of eight weeks. Rao and colleagues found that the number of complete spontaneous bowel movements was higher in the active group compared with the sham group in both arms of the study. Patients in the single-vibration study experienced a peak of complete spontaneous bowel movements approximately 8 to 12 hours after taking the VC. Patients in the multiple vibration group experienced an additional peak of bowel activity at 17 to 21 hours after intake.

Rao S, et al., "Abstract 73. Presented at: American College of Gastroenterology Annual Scientific Meeting; Oct. 5-10, 2018," Philadelphia.

Prostate Prognosis

research team enrolled patients with chronic idiopathic constipation into one of two double-blind, sham-controlled trials that used two different models of VC activation. In the first trial, patients underwent a single vibration session; in the second, the patients underwent multiple vibration sessions. Both groups recorded bowel symptoms over the course of eight weeks. Rao and colleagues found that the number of complete spontaneous bowel movements was higher in the active group compared with the sham group in both arms of the study. Patients in the single-vibration study experienced a peak of complete spontaneous bowel movements approximately 8 to 12 hours after taking the VC. Patients in the multiple vibration group experienced an additional peak of bowel activity at 17 to 21 hours after intake.

Rao S, et al., "Abstract 73. Presented at: American College of Gastroenterology Annual Scientific Meeting; Oct. 5-10, 2018," Philadelphia.

Prostate Prognosis

A new urine test has the potential to identify potentially aggressive prostate cancer years earlier than traditional assessments in patients with low-risk disease. The prognosis for prostate cancer depends on multiple factors. Survival rates and likelihood of recurrence are based on averages, which do not reflect individual patient outcomes. Prostate cancer is usually very slow to progress, but some cases are significantly more aggressive. Researcher Shea Connell of the University of East Anglia's Norwich Medical School in the United Kingdom, and colleagues have developed a urine test that can possibly predict the aggressiveness of a prostate cancer much earlier than other methods. They call the new test the Prostate Urine Risk test, or PUR. The researchers claim that it identifies men who are up to eight times less likely to need radical treatment within five years of diagnosis. The test offers further indications about who might need treatment five years sooner than present testing methods.

The researchers looked at the expression of 167 genes in the samples and found 35 genes that can help predict how dangerous a prostate cancer might be. The investigators followed up tracking the men's health for an average of six years. They observed that the profiles of 23 men whose cancer had progressed were significantly different from those whose cancer had not progressed. A commercially available test will probably not be available for several years, but the genetic analysis of urine samples from cancer patients opens up a potentially valuable new approach to cancer diagnosis and evaluation.

Connell S, Yazbek-Hanna M, McCarthy F, et al., "A four-group urine risk classifier for predicting outcomes in patients with prostate cancer," BJU International, *Volume 124, Issue 4, pp. 609-620, first published: 20 May 2019: https://doi.org/10.1111/bju.14811.*

Health Bits and Pieces (HFN 29:4)

Written by Dan Kenner, Ph.D., L.Ac.

Blood Sugar and Spice.

Cinnamon may be useful in regulating glucose metabolism in diabetic patients. Cinnamon inhibits an enzyme that helps metabolize carbohydrates into simple sugars, which would prevent a blood sugar drop after eating.

Shihabudeen HM, Hansi P, Kavitha Thirumurugan K, “Cinnamon extract inhibits α-glucosidase activity and dampens postprandial glucose excursion in diabetic rats,” *Nutrition & Metabolism*, 2011, 8:46 doi:10.1186/1743-7075-8-46.

And everything nice.

More research shows that other spices like turmeric, clove, and garlic, as well as cinnamon, can prevent a spike in blood sugar and an increase in plasma triglycerides, i.e., fat in the blood. Usually triglyceride and insulin levels rise significantly after a rich meal. Consuming a mixture of spices decreased the spike in insulin and triglycerides after a high-fat meal.

Skulas-Ray A, Kris-Etherton P, Teeter D, Chen C-Y, Vanden Heuvel J, West S, “A High Antioxidant Spice Blend Attenuates Postprandial Insulin and Triglyceride Responses and Increases Some Plasma Measures of Antioxidant Activity in Healthy, Overweight

Men,” *Journal of Nutrition*, August 1, 2011, Vol. 141, No. 8 at 1451-1457.

That’s what little girls are made of.

A new research report shows that resveratrol, a noted beneficial polyphenol found in red wine and some medicinal plants, stops breast cancer cells from growing by blocking the growth effects of estrogen and inhibiting the proliferation of hormone-resistant breast-cancer cells.

Francesca De Amicis F, Giordano F, Vivacqua A, et al, “Resveratrol, through NF-Y/p53/Sin3/HDAC1 complex phosphorylation, inhibits estrogen receptor α gene expression via p38MAPK/CK2 signaling in human breast cancer cells,” *The FASEB Journal*, October 2011, Vol. 25, No. 10 at 3695-3707.

What boys are made of . . .

An extract of ginger, a spice with known anti-inflammatory and antioxidant properties, inhibits growth of various types of prostate cancer cells as well as induces apoptosis (cell death).

Karna P, Chagani S, Gundala SR, Rida PC, Asif G, Sharma V, Gupta MV, Aneja R, "Benefits of whole ginger extract in prostate cancer," *British Journal of Nutrition*, 2011 Aug 18:1-12.

Turmeric Inflammation plays a central role in diabetic neuropathy by damaging the glomerulus, the tiny venous structures responsible for kidney filtration. The extract curcumin, from turmeric, appears to limit kidney damage in diabetics by reducing inflammation and its harmful effects.

Soetikno V, Sari F, Veeraveedu P, et al, "Curcumin ameliorates macrophage infiltration by inhibiting NF-κB activation and proinflammatory cytokines in streptozotocin induced-diabetic nephropathy," *Nutrition & Metabolism*, 2011, 8:35 doi:10.1186/1743-7075-8-35.

Fish oil, etc. Supplementation with Omega-3 fatty acids improves insulin resistance, which has been associated with the development of diabetes. These fatty acids are found in oily fish such as anchovies and sardines.

Giuseppe Derosa G, Cicero A, Fogari E, et al, "Effects of n-3 PUFA on insulin resistance after an oral fat load," *European Journal of Lipid Science and Technology*, Volume 113, Issue 8, pages 950–960, August 2011.

Carnitine The amino acid carnitine enhances glucose regulation and prevents spikes in blood sugar levels. The response in overweight men suggests that they may not be as sensitive to insulin as the test subjects with normal weight.

Galloway S, Craig T, Cleland S, "Effects of oral l-carnitine supplementation on insulin sensitivity indices in response to glucose feeding in lean and overweight/obese males," *Amino Acids,* Volume 41, Number 2, 507-515, DOI: 10.1007/s00726-010-0770-5.

Vitamin D The lower a person's level of serum Vitamin D is, the higher the prevalence of developing metabolic syndrome, also known as pre-diabetes. Vitamin D, which is fat-soluble, can be stored in fatty tissue and thus made unavailable in the blood where it is physiologically active.

D is independently associated with high-density lipoprotein cholesterol and the metabolic syndrome in men and women," *Journal of Clinical Lipidology*, 21 July 2009 (10.1016/j.jacl.2009.07.003).

Flavonoids Grape seed extract (GSE), a flavonoid-rich product, significantly improved markers of inflammation and glycemia, insulin resistance, and oxidative stress in obese Type-2 diabetic subjects who were at high risk of cardiovascular events over a four-week period. The researchers concluded that grape seed extract may have a therapeutic role in decreasing cardiovascular risk.

Kar P, Laight D, Rooprai HK, Shaw KM, Cummings M, “Effects of grape seed extract in Type 2 diabetic subjects at high cardiovascular risk: a double blind randomized placebo controlled trial examining metabolic markers, vascular tone, inflammation, oxidative stress & insulin sensitivity,” *Diabetic Medicine*, 2009, May;26(5):526-31.

They couldn’t afford a transplant

Researchers from UCLA and the Veterans Administration may have discovered a chemical that stimulates hair growth by blocking a stress-related hormone associated with hair loss. The researchers were investigating the effects of stress on the stomach and intestines with mice that were genetically altered to overproduce a stress hormone called corticotropin-releasing factor, or CRF. The mice lost hair as they aged and eventually became bald on their backs.

They used a peptide developed at the Salk Institute called astressin-B that blocks the activity of CRF on the bald mice. After several injections they placed the bald mice with the other ones, but three months later, the investigators returned to these mice but could not distinguish them from the others who had had no hair loss. They had re-grown the hair on their backs. Subsequent studies confirmed that the astressin-B peptide was responsible for the remarkable hair growth in the bald mice.

Wang L, Million M, Rivier J, Rivier C, Craft N, et al , “CRF Receptor Antagonist Astressin-B Reverses and Prevents Alopecia in CRF Over-Expressing Mice,” PLoS ONE, 6(2): e16377. doi:10.1371/journal.pone.0016377 (2011).

Vitamin D for Viruses Past and Present

Supplementation with Vitamin D has been shown to reduce the risk of reactivation of latent Epstein's Barr virus during the Winter months. This importance of this role of Vitamin D in immune health cannot be overstated.

Zwart SR, Mehta SK, Ploutz-Snyder R, et al., “Response to Vitamin D Supplementation during Antarctic Winter Is Related to BMI, and Supplementation Can Mitigate Epstein-Barr Virus Reactivation,” *Journal of Nutrition*, April 1, 2011 vol. 141 no. 4 692-697.

Health Bits and Pieces (HFN 29:3)

Written by Dan Kenner, Ph.D., L.Ac.

Big Brother Loves You!

It's that time of the year when the government shows its concern for our well-being by trying to terrify us into getting flu shots. In the Fall, the CDC goes into overdrive working in vaccine manufacturers' interests by conducting campaigns to increase the rate of flu vaccination. The CDC has repeatedly used what has now become a well-known statistic of 36,000 Americans dying from the flu annually; but this statistic is inaccurate because the great majority of these cases were never tested for the presence of the flu virus. The statistics include death from "associated" pneumonia. It also ignores other factors that contribute to the incidence of pneumonia such as stomach acid-suppressing drugs, immunosuppressive drugs, and surgical anesthesia. According to the CDC's National Center for Health Statistics (NCHS), "influenza and pneumonia" took 62,034 lives in 2001 – 61,777 of which were attributed to pneumonia and 257 to flu, and influenza virus was only positively identified in 18 cases. The CDC states that the historic 1968-69 "Hong Kong flu" pandemic killed 34,000 Americans. At the same time, CDC claims 36,000 Americans annually die from flu. What's up with that? Several years ago an article in the *British Medical Journal* soberly stated that, "If flu is in fact not a major cause of death, this public relations approach is surely exaggerated. Moreover, by arbitrarily linking flu with pneumonia, current data are statistically biased."

Laheij RJ, Sturkenboom MC, Hassing RJ, et al., "Risk of community-acquired pneumonia and use of gastric acid-suppressive drugs," *Journal of the American Medical Association,* 2004 Oct 27;292

(16):1955-60; and

Tea and Sympathy

Green tea decreases the incidence of influenza in elderly people in a study performed in Japan. The cathechins, antioxidant phenolic compounds found in green tea and theanine, an amino acid-like compound were considered to be the effective components in green tea. The researchers conducted a randomized, double-blind, placebo-controlled trial of 200 healthcare workers for five months from November 2009 through April 2010 in three healthcare facilities for the elderly in Japan. The catechin/theanine group received capsules including green-tea catechins (378 mg/day) and theanine (210 mg/day). The control group received a placebo. The measured outcomes were the incidence of clinically defined influenza infection or confirmed influenza with viral antigen measured in the laboratory, and the time for which the patient was free from influenza infection. The time for which the patient was free from clinically defined influenza infection was significantly different between the two groups.

Matsumoto K, Yamada H, Takuma N, Niino H, Sagesaka Y, "Effects of Green Tea Catechins and Theanine on Preventing Influenza Infection among Healthcare Workers: A Randomized Controlled Trial," *BioMed Central Complementary and Alternative Medicine*, 2011, 11:15 doi:10.1186/1472-6882-11-15.

Zinc and the Common Cold

A recent review of the scientific literature suggests that zinc, when taken within a day of the onset of cold symptoms, could reduce the severity and length of the illness. Past research has shown that zinc inhibits replication of cold viruses. The study reviewed 15 randomized controlled trials, enrolling 1360 participants of all age groups and compared zinc with a placebo. The study concluded that people taking zinc are less likely to have persistence of their cold symptoms beyond seven days of treatment if they supplement with zinc on the first day of the onset of symptoms. Continued zinc supplementation, for at least five months, was also found to reduce incidence of colds, school absenteeism, and prescription of antibiotics for children with the common cold. Antibiotics, of course, are not appropriate treatment for colds or for any type of viral infection, but they are still widely and inappropriately administered for a variety of non-bacterial infections including colds, sinus infections and most cases of bronchitis.

Singh M, Das RR, "Zinc for the common cold," Cochrane Database of Systematic Reviews 2011, Issue 2. Art. No.: CD001364. DOI: 10.1002/14651858.CD001364.pub3; *The Cochrane Database of Systematic Reviews*, 2011 Issue 9.

Why this is the flu season.

Sun exposure stimulates seasonal Vitamin-D production in the skin; Vitamin-D deficiency is common in the Winter, and activated Vitamin D has powerful effects on human immunity. It is an immune-system modulator, preventing excessive expression of inflammatory cytokines (chemical messengers of the immune system) and increasing the active potential of immune cells such as macrophages, neutrophils, monocytes, natural killer cells, and in the lining of the respiratory tract, where they play a major role in protecting the lung from infection.

Hope-Simpson RE, "The role of season in the epidemiology of influenza," *Journal of Hygiene* (London). 1981 Feb; 86 (1): 35-47.

What Kind of Vitamin D?

Vitamin D3 (cholecalciferol) is 87 percent more potent at raising blood levels of the vitamin than Vitamin D2 (ergocalciferol), according to a new study. In addition to the increase in potency, Vitamin D3 also produced a 2 to 3-fold increase in Vitamin D storage, compared with Vitamin D2. On average, 2000-5000 IU/day of Vitamin D3 may provide protection against influenza. Vitamin D3, the true form of Vitamin D, is produced in the skin from cholesterol, but Vitamin D precursors can be taken orally. Larger doses of Vitamin D taken for a short time strengthen the immune system. This allows the body to fight infection.

Heaney RP, Recker RR, Grote J, Horst RL, Armas LAG, “Vitamin D3 Is More Potent Than Vitamin D2 in Humans,” *The Journal of Clinical Endocrinology & Metabolism*, March 1, 2011 vol. 96 no. 3.

What to do for flu?

Volunteers inoculated with live influenza virus are more likely to develop fever and evidence of an inflammatory immune response in the Winter. A controlled clinical study showed that Vitamin-D deficiency predisposes children to respiratory infections. Ultraviolet radiation (either from artificial sources or from sunlight) reduces the incidence of viral respiratory infections, as does cod liver oil (which contains Vitamin D). The clinical study showed that Vitamin D reduces the incidence of respiratory infections in children. Another randomized controlled trial using 1200 IU/day of Vitamin D for school children in Japan found a 64% reduction in Type A influenza cases compared with controls taking a placebo. The recent H1N1 “swine flu” was Type A. People in groups known to have lower Vitamin-D levels, such as pregnant women, had much higher rates of hospitalization than others. Vitamin D also reduces the risk of death from influenza by fighting bacteria that can lead to pneumonia.

Cannell JJ, Vieth R, Umhau JC, et al., “Epidemic influenza and vitamin D,” Epidemiology and Infection, 2006 Dec;134(6):1129-40. Epub 2006 Sep 7; Urashima M, Segawa T, Okazaki M, et al., “Randomized trial of vitamin D supplementation to prevent seasonal influenza A in schoolchildren,” *American Journal of Clinical Nutrition*, 2010 May; 91 (5): 1255-60.

Health Bits and Pieces (HFN 29:2)

Written by Dan Kenner, Ph.D., L.Ac.

And on the 7th day they rested

In recent years researchers in biotechnology have advanced genetic science to where it is possible to manipulate the DNA codes of all plants or animals. Monsanto has become the leader in this field and has re-coded the DNA of wheat, rice, soybeans, corn, and cotton. The DNA codes cause the plant to end the reproductive cycle so that there is no subsequent generation of seeds. This makes seeds for each year's crop a new market cycle. The technology patent system turns the seeds into a patentable product that has to be re-purchased every year, making naturally-produced seeds obsolete.

But it has great potential as a pesticide

A member of the European Union Commission for Biotechnology Reevaluation reported that three genetically modified varieties of GMO corn from Monsanto are toxic to rats in animal studies. Gilles-Eric Séralini, co-author of a paper published in The International Journal of Biological Sciences, stated that "for the first time in the World, we've proven that GMOs are neither sufficiently healthy nor proper to be commercialized. Each time, for all three GMOs, the kidneys and liver, which are the main organs that react to a chemical food poisoning, had problems." They drew their conclusion based on data supplied by Monsanto to try to obtain permission for commercialization.

Spiroux de Vendômois J., "Roullier F, Cellier D, Séralini G-E, A Comparison of the Effects of Three GM Corn Varieties on Mammalian Health," *International Journal of Biological Sciences* 5:706-726, 2009.

And they sent back the bottle of wine

Jeffrey Smith, author of Seeds of Deception: Exposing Industry and Government Lies about the Safety of the Genetically Engineered Foods You're Eating, reported that even FDA scientists have speculated that GMO foods could be the cause of allergies and nutritional problems. A former Monsanto scientist reportedly told Smith that some of his colleagues who researched recombinant bovine growth hormone (rBGH) switched to drinking organic milk and that they routinely rigged research. He said that Monsanto has "got bad science down to a science." Over one-third of test rats force-fed GMO tomatoes developed stomach lesions and several died. They were force-fed because they did not voluntarily eat the tomatoes. Other reports describe how cows, pigs, deer, elk, raccoons, geese, as well as mice and rats avoid GM food if given a choice.

Dud spud or a greatah potatah?

Animal feeding studies on GM potatoes were launched in the UK to prove their safety. One of the top scientists in this field, Dr. Arpad Pusztai, working at the leading UK research institute in nutrition, developed a research model to evaluate the effects of feeding GE potatoes to rats. They fed one group a complete and balanced diet, with a GM potato crossed with a species that produces an insecticide; another group got natural potatoes; a third got natural potatoes spiked with the insecticide that the GE potato was engineered to produce. The GE potato alone harmed the rats, which developed potentially premalignant cell growth in the digestive tract. The rats also showed smaller brains, livers and testicles, liver atrophy and damaged immune systems – in 10 days! Rats eating the potato spiked with the same pesticide had no problem, so the process of genetic engineering apparently caused the problem.

Ewen S. Pusztai A, “Effect of diets containing genetically modified potatoes expressing Galanthus nivalis lectin on rat small intestine,” *Lancet,* 354(9187): 1353-1354, 1999.

Another load of manure.

It may be that GMO foods are not only a possible source of toxic microbes, but that genetic material from other species can escape the gut and infiltrate our body cells. The previous assumption was that DNA would be rapidly broken down by digestive enzymes. A research model using calves recently demonstrated that a certain amount of DNA survives in the intestines. It also showed that the DNA was absorbed into the general circulation through the intestinal wall. Bacteria carrying trans-species DNA can potentially be carried by bacteria into the body’s cells.

Schubbert, R., Lettmann, C. and Doerfler, W., “Ingested foreign (phage M13) DNA survives transiently in the gastrointestinal tract and enters the bloodstream of mice,” *Molecular and General Genetics* 242, 495-504 (1994).

Frankenfish

Scientists from the Royal Society of Canada have stated that “deleterious consequences to fish morphology, respiratory capacity, and locomotion associated with the introduction of growth hormone (GH) … in notably Pacific and Atlantic salmon.” Franken-salmon raised in containment pools will also have an increased level of Omega-6 (same as factory farmed livestock). It’s the high levels of omega-3 fatty acids that balance high omega-6 levels in our diets that make fish a desirable food. The transgenic DNA of Franken-salmon will be incorporated into the genomes of the bacteria in the human digestive tract and also inevitably into the ocean environment affecting the wild population as well.

Under current law, Frankenfish are not required to be labeled as GE or GMO thereby depriving consumers of their right to choose. This is reprehensible because public opinion surveys show that Americans are even more wary about GE animals than about the GE or GMO crops now used in a huge number of foods. Surveys show that more than 98% of Americans would reject GMO foods if labeled.

Muir W, Howard R,, “Possible Ecological Risks of Transgenic Organism Release when Transgenes Affect Mating Success: Sexual Selection and the Trojan Gene Hypothesis, 96 Proceedings of the National Academy of Sciences,” 13853-56 (1999).

Health Bits and Pieces (HFN 29:1)

Written by Dan Kenner, Ph.D., L.Ac.

The Japanese nuclear disaster should be of concern to us all for many reasons, including the fact that there are nuclear reactors in California built on tectonic faults. So this issue's column is adopting a slightly different format to present critical protective information to you.

Iodine is important for the period of time after exposure to radiation in which radioactive iodine is present. Taking iodine in the form of potassium iodide is intended to saturate the chemical binding sites in the thyroid to prevent proteins in the thyroid gland from forming chemical bonds with radioactive iodine. Iodine offers no protection from any of the other radioactive elements, all of which have much longer half lives than iodine, except for thyroid support in some cases. There are several forms of iodine for oral use, such as iodoral and Lugol's solution. It is advisable to consult with your health-care provider before using iodine supplementation.

Beyond preventing the absorption of radioactive iodine, thyroid support is critical for radioprotection. It is also critically important to bind and remove radioactive toxins and supply electrolytes from mineral-rich sources to maintain transit of the lymph fluid, which can stagnate from the effects of ionizing radiation. There are many natural substances that have been found to be radioprotective. Some of them attach the radioactive toxins and take them out of the system. Others promote bone marrow activity, protect immunity and blood-production capability.

This is by no means an exhaustive list, but here are a few important radioprotective substances:

Alginates are derived from sea vegetation such as kombu (*Laminaria digitata*) and are used as a staple food source in East Asian countries. Sea vegetables rich in alginates are often used therapeutically for removal of toxic metals, like lead and mercury. They absorb and bind all kinds of other toxic materials as well, including radioactive isotopes. Sea vegetables are also the richest plant source of digestible minerals including many trace elements. [Ivannikov A, Altukhova G, Parfenova I, Popov B, "The effect of algisorb on the level of the accumulation of zirconium, ruthenium, iodine and cesium radioactive isotopes in the body of rats," *Radiats Biol Radioecol* (Radiation Biology and Radioecology) 1996 May-Jun;36(3):427-33 [Article in Russian]]

Blue-green algae and chlorophyll have been studied for radioprotective effects. They do not contain the level of iodine found in the marine algae, but are rich in digestible proteins and magnesium. [Zimmering S, Olvera 0, Hernandez

M, Cruces M, Arceo C, and Pimental E, “Evidence for a radioprotective effect of chlorophyll in Drosophilia,” *Mutation Research* 245:47-49, 1990]

Fireweed, known as Great Willow-herb in Canada and or Rosebay Willow herb in the U.K, showed a radioprotective and therapeutic effect in experiments conducted in mice. The extract was administered orally and found to promote an increase in white blood cells, bone marrow, and spleen cells, increasing the survival rate among the animals. [“Hematopoiesis-stimulating and radiomodifying effects of a preparation from a plant *Chamaenerion angustifolium*. [English Abstract, Journal Article],” *Radiats Biol Radioecol* (Radiation Biology and Radioecology)2010 Sep-Oct; 50(5):536-41]

Sea buckthorn is used in Chinese and Tibetan medicine and has a variety of properties, including anti-inflammatory and possibly anti-cancer effects. [Y. H. Gu Y, Iida Y, Itokawa Y, et al., “Anti-cancer and radiation protection effects by *Hippophae rhamnoides,*” 2007 Korean Conference on Oriental Pathology (Therapeutic Research for Intractable Diseases with Herbal Drugs), Seoul, 2007]

Ginseng has radioprotective potential as well as widely researched immunomodulating capabilities. Its radioprotective and immunomodulating properties are supported by a large number of studies. [Kim S, Jo S, Kim S, “Modification of radiation response in mice by ginsenosides, active components of Panax ginseng,” *In Vivo* 17: 77–82, 2003;Kim T, Lee Y, Cho C-K, Park S, Choi S.-Y, Yool S.-Y, “Protective effect of ginseng on radiation-induced DNA double strand breaks and repair in murine lymphocytes,”*Cancer Biotherapy and. Radiopharmaceuticals*11:267–272,1996]

Ginger has antioxidant and free radical-scavenging properties. It also stimulates thyroid function and enhances circulation. [Nabil G, Attia A, Elhag M, “Radioprotective effects of dietary ginger (*Zingiber officinales* Rosc.) against fast neutron-induced oxidative stress in rats,” *World Applied Sciences Journal* 6: No. 4, pp.494-498, 2009]

Mushroom extracts contain beta and alpha glucans that have been found to protect from radiation, and even prevent genetic abnormalities and leukemia caused by radiation in test animals. [Yuen-hwa Gu, et al., “Enhancement of radioprotection and anti-tumor immunity by yeast-derived beta-glucan in mice,” *Journal of Medical Food* 2005, Department of Radiological Technology, Suzuka University of Medical Science, Suzuka, Japan; Yuen-hwa Gu, et al., “Radioprotection and Anti-tumor Immunity in AHCC,” Suzuka University of Medical Science, Japan, Proceedings of the 15th International Conference of the AHCC Research Society]

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Clay. Fulvic acid and humic acid are found in clay, soil-based microorganisms, and the Ayurvedic medicine shilajit. The protective effect of humic acid against radiation was demonstrated in rats using lethal doses of gamma radiation from radioactive cobalt. The lethal effect of the gamma rays was prevented by 50 percent in the experiments. Russian scientists are now using the same principle for treatment of radiation sickness. It has also been observed that radioactive cesium-137 in clay soils is not found in the local groundwater runoff because *it binds to the minerals in the clay. [*Pukhova G, Druzhina H, Stepchenko L, Chebotarev E, "Effect of sodium humate on animals irradiated with lethal doses," *Radiobiologiia* 27(5): pp. 650-653, 1987]

Royal Jelly and Propolis have long been used in China and elsewhere for their benefits to the immune system. Well-documented evidence shows that they counteract the effects of severe toxins formed by radiation. The antioxidants from royal jelly and propolis are clinically proven to strengthen immune response and protect the body from radiation. [Gu Y, Itokawa Y, Masubuchi T, et al, "Radiation protection and Immune enhancement effect in royal jelly," 2007 Korean Conference on Oriental Pathology (Therapeutic Research for Intractable Diseases with Herbal Drugs), Seoul, 2007. 10; El-Khatib A, Agha A, Mahran L, Khayyal M, "The use of aqueous propolis extract against radiation-induced damage," *Drugs Under Experimental and Clinical Research* 21(6).229-36 (1995)]

Health Bits and Pieces (HFN 30:4)

Written by Dan Kenner, Ph.D., L.Ac.

Introduction. We habitually think of our bodies as chemical factories, and don't realize to what extent they are also electronic mechanisms. Over one-third of the oxygen we breathe and around half of the food we eat are used to maintain electric charges across cell membranes. Authorities have been telling the public for decades that the intense and widespread man-made electromagnetic radiation presents no health threat because there are no ionizing effects (like X-rays or nuclear radiation) and no thermal effects – in other words, it doesn't heat body tissues (think microwave oven). The sources of electromagnetic radiation (EMF) particularly in the extremely low frequency (ELF) spectrum, are power lines, cell phones, Wi-Fi, and much more. This level of radiation is many times stronger than from natural sources.

There is still controversy about the relation between cell-phone use and brain cancer. Some studies have shown a link and others have rejected any connection. Most scientific authorities agree that most of the studies have flaws that prevent a final conclusion, but do not discount a possible link. Proponents of epidemiological studies claim that data collected over a 20-year period should lead to clear evidence of a brain-cancer link to cell-phone use. But there are many reasons to be concerned about the effects of daily exposure to EMFs on our health and well-being. We cannot discount the fact that there are some people who report a hypersensitivity to EMFs. Even if those individuals are not really as sensitive as they claim, EMF sensitivity should still be researched and the sensitivity of children to noxious influences must be taken into account scientifically and as a public-policy issue.

A spectrum analysis done in Canada 30 years ago showed that radiation from 60-hertz power lines, hydroelectric stations, 10-hertz Soviet radar emissions and signals from the Soviet Union, Japan, China, Europe, and Africa was collectively about ten times stronger than natural background radiation. Many experts on the biological effects of EMFs and wireless technologies believe that cell phones and related devices can cause DNA damage that can not only induce cancer but contribute to a wide variety of other conditions, even heart disease, infertility and depression. The second-biggest spender on Federal lobbying among industries in 2008 (after BigPharma) was the electric-utility industry, which spent $156.7 million in 2008 (Project Censored May 8, 2010 www.projectcensored.org). Here is what they don't want you to know.

DNA Effects

Dr. Martin Blank, PhD, of the Department of Physiology Columbia University, explains that DNA is especially sensitive to the effects of EMFs because the helical coils of DNA structure are like a type of antenna called a "fractal antenna," which is sensitive to a wide range of frequencies. He has also observed that cells react to EMFs by manufacturing "heat shock proteins" (HSP), which break up the DNA molecule. The presence of HSP indicates to cell biologists that the cells have encountered a noxious influence. *Blank M, Goodman R, "DNA is a fractal antenna in electromagnetic fields,"* International Journal of Radiation Biology*87(4): 409-415 (2011) (doi:10.3109/09553002.2011.538130); Blank M, Goodman R, "A Mechanism for*

Stimulation of Biosynthesis by Electromagnetic Fields: Charge Transfer in DNA and Base Pair Separation," Journal of Cellular Physiology *214: 20–26, (2008).*

Blood-Brain Barrier Effects

EMFs may have direct influences on all cells because of their effect on DNA, but they may affect brain cells even more strongly for two reasons. The obvious reason is that most people hold their cell phones to their ears, bringing the source of radiation into proximity of the brain cells. But another reason is that cell-phone radiation may affect an important protective mechanism of the brain – the blood-brain barrier. The blood-brain barrier (BBB) filters out toxins and large molecules from entering sensitive brain cells where it can cause permanent damage. Studies have shown that EMF exposure can increase the permeability of the BBB giving large molecules access to brain tissue. *Salford L, et al., "Permeability of the blood brain barrier induced by 915MHz electromagnetic radiation continuous wave and modulated at 8, 16, 50 and 200 Hz,"* Microscopy Research Technique *27: 535–542 (1994); Schirmacher A, "Electromagnetic fields (1.8 GHz) increase the permeability of sucrose of the blood–brain barrier in vitro,"* Bioelectromagnetics *21: 338–345 (2000).*

The Melatonin Hypothesis

Some studies have shown a possible decreased release of melatonin in the brain among people who use a mobile phone for more than 25 minutes a day. Reduced melatonin could explain why some studies have shown a relationship with sleep disturbance and cell-phone use. But melatonin is also a free-radical scavenger and an anti-oxidant and this could also link cell phone use with cancer and other types of cellular damage. One study of electrical workers observed a link between reduced melatonin and an increase in a type of protein associated with Alzheimer's disease. *Burch J, Reif J, Noonan C, et al., "Melatonin metabolite excretion among cellular telephone users,"* International Journal of Radiation Biology *78: 1029–1036 (2002); Noonan C, Reif J, Burch J, et al, "Relationship between amyloid beta protein and melatonin metabolite in a study of electric utility workers,"* Journal of Occupational and Environmental Medicine *44: 769–775 (2002).*

Breast Cancer

But perhaps the most important function of melatonin is how it interacts with breast-cancer cells. Studies have found that a reduced level of melatonin in the body stimulates the growth of certain breast-cancer cells. When melatonin is added to these cells, their growth is inhibited. Women with breast cancer have as little as 1/10 the amount of melatonin in their bodies, compared to healthy women. *Liburdy R, Sloma T, et al., "ELF magnetic fields, breast cancer, and melatonin: 60 Hz fields block melatonin's oncostatic action on ER+ breast cancer cell proliferation,"* Journal of Pineal Research *14: 89–97 (1993).*

High-Voltage Power Lines and Leukemia

There is scientific evidence that exposure to magnetic fields from power lines with a field stronger than 4 milligauss is associated with an elevated risk of childhood leukemia. Some scientific research indicates an elevated risk at levels of only 2 milligauss. A home that is not near a power line will usually have a level of less than 1 milligauss. Leukemia and brain cancer are also a threat for adults exposed to high levels as well. Lifetime exposure to electromagnetic

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Heart Disease

Even at low doses there appears to be enough energy transmitted to create some degree of oxidative stress on tissues. The role of heat shock proteins could also play a role in heart disease. One of the highest rates of heart disease in the World was in a rural village in Finland not far from the Soviet border. The heart-disease cluster remained a mystery to epidemiologists until one scientist tentatively suggested that there could be some influence from one of the largest microwave relay installations in the World, part of the Soviet missile-defense apparatus, which was just across the lake that constituted the border between the two countries. The rate of mortality due to heart disease increased incrementally in those populations approaching the border. *Ozguner F, Altinbas A, Ozaydin M, et al., “Mobile phone-induced myocardial oxidative stress: protection by a novel antioxidant agent caffeic acid phenethyl ester,”* Toxicology and Industrial Health *21(9): 223–230 (2005); Pockley A, “Heat Shock Proteins, Inflammation, and Cardiovascular Disease,”* Circulation *105:1012-1017 (2002), doi:10.1161/hc0802.103729.*

Fertility

There is evidence that cell phones decrease the sperm count, quality, motility, viability, and morphology of semen in humans. The decrease in these factors was dose-dependent, related to the daily length of exposure to cell phones. In rats and mice, studies have shown impaired reproductive ability in male and female studies. *Agarwal A, Deepinder F, Sharma RK, Ranga G, Li J, “Effect of cell phone usage on semen analysis in men attending infertility clinic: an observational study,”* Fertility and Sterility *89(1):124-8 (2008); De Iuliis G, Newey R, King B, Aitken R, “Mobile phone radiation induces reactive oxygen species production and DNA damage in human spermatozoa in vitro,”* PloS One *4(7):e6446 (2009) PMID: 19649291; Kumar S, Kesari K, Behari J, “Influence of microwave exposure on fertility of male rats,”* Fertility and Sterility *95(4):1500-2 (2010) PMID:20723534; Rajaei F, Borhani N, Sabbagh-Ziarani F, Mashayekhi F, “Effects of extremely low-frequency electromagnetic field on fertility and heights of epithelial cells in pre-implantation stage endometrium and fallopian tube in mice,”* Zhong Xi Yi Jie He Xue Bao *8(1):56-60 (2010) pubmed/20082760.*

Health Bits and Pieces (HFN 30:3)

Written by Dan Kenner, Ph.D., L.Ac.

And their hard teeth hurt when they bite

A recent Harvard University study has shown that water fluoridation can have a harmful effect on brain function. Children in high-fluoride areas were found to have significantly lower IQs than those who lived in no-fluoride or low-fluoride areas. The children researched in the study were up to 14 years of age, and there is some speculation that young brains may not be able to fully develop, especially if the toxicity caused damage at a very early age. Researcher Philippe Grandjean commented that "Fluoride seems to fit in with lead, mercury, and other poisons that cause chemical brain drain. The effect of each toxicant may seem small, but the combined damage on a population scale can be serious, especially because the brain power of the next generation is crucial to all of us."

Choi AL, Sun G, Zhang Y, Grandjean P, "Developmental Fluoride Neurotoxicity: A Systematic Review and Meta-Analysis," Environmental Health Perspectives *2012, http://dx.doi.org/10.1289/ehp.1104912.*

Malignant Cells

The World Health Organization (WHO) has classified cell phones as a "carcinogenic hazard" placing it in the same category as lead, engine exhaust, and chloroform. After examining peer-reviewed studies on cell-phone safety, 31 scientists from 14 countries, including the United States, made the decision after finding enough evidence to categorize personal exposure to cell phone radiation as "possibly carcinogenic to humans." The evidence shows an increased risk of glioma, a type of brain cancer, and acoustic neuroma, a benign growth on the acoustic nerve. Although WHO has previously stated that there is not sufficient evidence to link cell phones with any risk, the European Environmental Agency has held the position that long-term cell-phone use could be as big a public health risk as smoking, asbestos, and leaded gasoline. The risk may be substantially greater for children. According to Dr. Keith Black, chairman of Neurology at Cedars-Sinai Medical Center in Los Angeles, "Children's skulls and scalps are thinner. So the radiation can penetrate deeper into the brain of children and young adults. Their cells are dividing at a faster rate, so the impact of radiation can be much larger,"

Baan R, Grosse Y, Lauby-Secretan B, et al, on behalf of the WHO International Agency for Research on Cancer Monograph Working Group, "Carcinogenicity of radio frequency electromagnetic fields," Lancet Oncology*, Volume 12, Issue 7, pp 624-626, July 2011; doi:10.1016/S1470-2045(11)70147-4, Published Online: 22 June 2011.*

Garden Variety Antibiotic

Essential oil of oregano has been found to control a common hospital infection that is extremely resistant to antibiotics. Oil of oregano is effective when applied topically against methicillin-resistant *Staphylococcus aureus* (or MRSA) as well as against a number of other bacteria. Oil of oregano is also given orally in European botanical medicine as an antibiotic for bronchial, lung, gastrointestinal, and other infections.

Eng W, Norman R, "Development of an oregano-based ointment with anti-microbial activity including activity against methicillin-resistant," Staphylococcus aureus. Journal of Drugs in Dermatology, *2010 Apr;9(4):377-80.*

Cardiovascular Health Supplements

Recent studies support the use of popular nutritional supplements for heart-attack and stroke prevention. Increasing intake of magnesium can reduce the likelihood of death from stroke and cardiovascular disease, according to a Japanese study that was carried out over 15 years. Magnesium is an important mineral that is deficient in the diet of many Americans.

Supplementation with Coenzyme Q-10 (CoQ-10) decreased signs of inflammation in the blood in patients with coronary artery disease. Blood-test parameters for inflammation include interleukin-6 (IL-6), homocysteine, and c-reactive protein (CRP). Long-term elevated levels of these inflammatory "markers" are strongly associated with an increased risk of developing coronary artery disease. Increased levels of CoQ-10 in the blood resulted in decreased levels of IL-6 and CRP but did not affect homocysteine (Note: B vitamins and folic acid are commonly used to lower homocysteine levels in the blood).

Zhang W, Ito H, Ohira T, Date C, Tamakoshi A, "Associations of dietary magnesium intake with mortality from cardiovascular disease: The JACC study," Atherosclerosis *Volume 221, Issue 2 , pp 587-595, April 2012.*

Lee B, Huang Y, Chen S, Lin P, "Effects of coenzyme Q10 supplementation on inflammatory markers (high-sensitivity C-reactive protein, interleukin-6, and homocysteine) in patients with coronary artery disease," Nutrition *2012 Jul;28(7-8):767-72. Epub 2012 Feb 17.*

Prostate Protection

An epidemiological study in Washington State found that men who used grape seed extract reduced their risk of developing prostate cancer by 41%. The participants were 35,239 male members, 50-76 years of age, in a study called the "VITamins And Lifestyle (VITAL) cohort." This study is designed to investigate the associations of the use of vitamin, mineral, and specialty supplements with cancer risk. Grape seed extract was the only one of the supplements surveyed showing a clear risk reduction for prostate cancer. No similar risk reduction was noted from the use of chondroitin, Co-enzyme Q10, fish oil, garlic, ginkgo biloba, ginseng, glucosamine, or saw palmetto.

Eng W, Norman R, "Development of an oregano-based ointment with anti-microbial activity including activity against methicillin-resistant," Staphylococcus aureus. Journal of Drugs in Dermatology, *2010 Apr;9(4):377-80.*

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Brasky T, Kristal A, Navarro S, et al, "Specialty Supplements and Prostate Cancer Risk in the VITamins And Lifestyle (VITAL) Cohort," Nutrition and Cancer *2011 May; 63(4): 573-582, doi: 10.1080/01635581.2011.553022.*

Health Bits and Pieces (HFN 30:2)

Written by Dan Kenner, Ph.D., L.Ac.

Drink and Be Merry

Ecclesiastes 31:35: "Wine was created from the beginning to make men joyful."

Traditional Medicine

Most of us have heard about the "healthy French heart," also called the "French paradox." It was observed that the French have a lower rate of heart disease than the U.S. despite levels of dietary fat consumption equal to the U.S. and other developed nations. Consumption of red wine turned out to be an important key to the puzzle. This observation and subsequent research has helped debunk the idea that the cause of heart disease is a high-fat diet and also the idea that wine consumption is harmful to our health. Within even the last few years, research on the powerful health benefits of wine polyphenols, especially the flavonoids (pigments found in numerous fruits and vegetables), has accumulated at an ever-increasing rate. But the tradition of wine as a medicine as well as a food has a long tradition.

The first reference in the medical literature to angina pectoris (deep chest pain) mentions red wine as a remedy. Dr. William Heberden noted in 1786 that red wine provided "considerable relief" for pains in the breast. In 1819, an Irish physician, Dr. Samuel Black observed a high occurrence of heart pain and symptoms in Ireland but noted that his French colleagues seldom reported these types of symptoms. Red wine, in fact, was historically used as a *treatment* for heart disease. St. Benedict, founder of the Benedictine monks, allocated a daily ration of wine to all of the monks; but extra wine was provided to any who were ill. The Puritans drank wine as part of their daily lifestyle and even the Women's Christian Temperance Union, which agitated for alcohol prohibition in the 1800s, condoned moderate consumption of wine and beer.

Heberden W, "Some account of a disorder of the breast," *Medical Transactions of the Royal College of Physicians* (London) 1786, 2:59.

What about the Alcohol?

Now that research has shown that wine flavonoids, especially resveratrol, have formidable health benefits, can't we get them from fruit juices or pills? Of course we can get them from a wide variety of fruits including some the new superstars, like pomegranate, acai, and various other berries. But red wine is exceptional and the alcohol content may be a valuable component. An analysis by Harvard epidemiologists confirmed heart-disease preventive benefits from alcohol derived from any source.

Gaziano J, Hennekens J, Godfried S, *et al*., "Type of alcoholic beverage and risk of myocardial infarction," *American Journal of Cardiology*, 1999, 83:52-8357.

The Cover-up

Scientists analyzing data from the Framingham Heart Study, a long-term research project initiated in 1948 and continuing today on the relation of diet, lifestyle and heart disease, found that moderate alcohol consumption resulted in a major reduction in the odds of dying of heart disease. Although this was observed as early as 1974, these observations were censored by the government for several years. A Harvard-based study of over 87,000 nurses in the 1980s came to a similar conclusion. By the 1990s other research made the conclusion unavoidable.

Gordin T, Kannel W, "Drinking habits and cardiovascular disease: The Framingham Study," *American Heart Journal*, 1983, 105:667.

Stampfer M, Colditz G, *et al*, "A prospective study of moderate alcohol consumption and the risk of coronary disease and stroke in women," *New England Journal of Medicine*, 1988, 319(5): 267.

The Benefits

The effects of red wine on health do not stop with cardiovascular protection. Research has shown numerous beneficial effects, general anti-aging effects, stimulating bone growth, cancer prevention, optimization of conventional cancer therapy, and prevention of side effects; it appears to be a COX-2 inhibitor-type anti-inflammatory agent tested in the treatment of arthritis and pancreatitis (cancer prevention, including melanoma and colon cancer), optimizes conventional cancer therapy, protects the skin from sun damage, and prevents cognitive decline including Alzheimer's.

Anti-aging:

Wood J, Rogina B, *et al*., "Sirtuin activators mimic caloric restriction and delay ageing in metazoans," *Nature*, 2004, 430: 686.

de la Lastra C, Villegas I, "Resveratrol as an anti-inflammatory and anti-aging agent: Mechanisms and clinical implications," *Molecular Nutritional Food Research*, 2005, 49(5): 405.

Bone growth:

Rucinski M, Ziolkowska A. *et al*., "Estradiol and resveratrol stimulating effect on Osteocalcin, but not osteonectin and collagen-1 alpha gene expression in primary culture of rat calvarial osteoblasts-like cells," *International Journal of Molecular Medicine*, 2006, 18(4): 565.

Inflammation:

Bertelli A, Falchi M, *et al*., "Analgesic resveratrol?" *Antioxidants and Redox Signaling*, 2008, 10(3): 403-404.

Elmali N, Bavsol O, Harma A, *et al*., "Effects of resveratrol in inflammatory arthritis, *Inflammation*, 2007, (1-2): 1-6.

Ma Z, Ma Q, Resveratrol: a medical drug for acute pancreatitis," *World Journal of Gastroenterology*, 2005, 11(21): 3171.

Cancer prevention and treatment:

Soleas J, Grass L, *et al*, “A comparison of the anti-carcinogenic properties of four red wine polyphenols,” *Clinical Biochemistry*, 2006, 39(5): 492.

Schooen W, Salinas C, *et al*., “Alcohol consumption and risk of cancer in middle-aged men,” *Epidemiology*, 2005, 1113(1): 133.

Niles R, McFarland M, *et al*., “Resveratrol is a potent inducer of apoptosis in human melanoma cells,” *Cancer Letters*, 2003, 190(2): 157.

Wolter F, Ulrich S, Stein J, “Molecular mechanisms of the chemopreventive effects of resveratrol and its analogs in colorectal cancer: key role of polyamines,” *Journal of Nutrition*, 2004, 134: 3219.

Garg A, Buchholtz T, Aggarwal B, “Chemosensitization and radiosensitization of tumors by plant polyphenols,” *Antioxidants and Redox Signaling*, 2005, (11-12): 1630.

Baliga M, Katiyar S, “Chemoprevention of photocarcinogenesis by selected dietary botanicals,” *Photochemical and Photobiolical Sciences*, 2006, 5(2): 243-253. (Resveratrol prevents skin cancer from sun exposure)

Cognitive decline:

Elias P, Elias M, *et al*, “Alcohol consumption and cognitive performance in the Framingham Heart Study,” *American Journal of Epidemiology*, 1999, 150(6): 580.

Marambaudl P, Zhao H, Davies P, “Resveratrol promotes clearance of Alzheimer’s disease amyloid-β peptides,” *Journal of Biological Chemistry*, 2005, 280(45): 373-377.

But what about Breast Cancer?

Breast cancer seemed to be an exception to wine’s reputation as a health benefit. By the mid-1990s, dozens of epidemiologic studies had shown that alcohol increases risk of breast cancer. More recent analysis of the data shows that many studies did not sort out factors like tobacco smoking and excessive drinking, for example. A 1999 report on the Framingham Study found no correlation between light-to-moderate alcohol consumption and breast cancer. A study in southern France revealed the lowest risk group to be those who drank small amounts of alcohol, less than 1.5 drinks per day, on a regular basis.

Zhang Y, Kreger B, *et al*, “Alcohol consumption and risk of breast cancer: the Framingham Study revisited,” *American Journal of Epidemiology*, 1999, 149(2): 93.

Bessaoud F, Daures FJ, “Patterns of alcohol (especially wine) consumption and breast cancer risk: a case-control study among a population in southern France,” *Annals of Epidemiology*, 2008, 18(6): 467-475.

Abusus non tollit usum

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Everyone seems to agree that moderate consumption has decided health benefits. But not everyone agrees on how to define moderation. People with a genetic predisposition toward alcoholism are well advised to abstain completely. A gene related to a receptor that promotes movement of the neurotransmitter gamma-amino butyric acid (GABA) between nerve cells seems to be consistently associated with alcohol dependence. GABA is the major inhibitory chemical in the central nervous system. Many clinical conditions, including psychiatric disorders, appear to involve an imbalance in excitation and inhibition of GABA.

Some experts say that men should have no more than two servings of alcohol a day; for women, the recommended limit is just one. More than that and you run the risk of addiction and numerous other health hazards even if you don't drive while drinking. But, realistically, the safe dose could be literally as little as a thimbleful or more than two glasses, depending on one’s genetic make-up and the alcohol content of the wine. One study at the Catholic University of Rome found that daily consumption of up to a liter for men and a half-liter for women improved cognitive performance.

Dick D, Edenberg H, Xuei X, *et al*., “Association of GABRG3 with alcohol dependence,” *Alcoholism: Clinical and Experimental Research* 28:4–9, 2004. PMID: 14745296

Zuccala G, Onder G, *et al*., “Dose-related impact of alcohol consumption on cognitive function in advanced age: results of a multi-center survey,” *Alcoholism: Clinical & Experimental Research*, 2001, 25(12): 1743.

Health Bits and Pieces (HFN 30:1)

Written by Dan Kenner, Ph.D., L.Ac.

Acupuncture in the Modern World

Acupuncture is the treatment method of stimulating points on the body, using thin, solid, metallic needles that are manipulated by hand or by electrical stimulation. The traditional Chinese theory is based on balancing the flow of *qi*, which is considered to be the force that animates life.

Somewhere a Voodoo Doll Shrieks in Agony

The needles are placed in points along "meridians," invisible channels that flow through the skin as well as internal pathways throughout the body. Needless to say, modern scientific research has sought other explanations. Modern tools such as functional magnetic resonance imaging, PET (positron emission tomography) scans and MEG (magnetoencephalography) scans can map the impact of acupuncture on the brain. *Kong J, Gollub RL, Webb JM, et al., "Test-retest study of fMRI signal change evoked by electro-acupuncture stimulation,"*NeuroImage*2007;34(3):1171–1181; Napadow V, Kettner N, Liu J, et al., "Hypothalamus and amygdala response to acupuncture stimuli in carpal tunnel syndrome,"*Pain*2007;130(3):254–266.*

But activation of various brain structures is not the only possible mechanism involved. Other studies on the mechanisms underlying acupuncture have revealed that acupuncture stimulates secretion of "endorphins," endogenous opiates in the central nervous system have a pain-relieving effect and promote a sense of well-being. Studies have even shown that different kinds of endorphins are released by acupuncture using different electrical frequencies to stimulate needles. For example, 2 Hertz accelerates the release of enkephalin, beta-endorphin and endomorphin, while 100 Hertz increases the release of dynorphin. The two frequencies combined produce an optimal effect from simultaneous release of all four of the opioid peptides. Clinical studies in patients with various kinds of chronic pain have confirmed this finding. *Han JS,* Neuroscience Letters *2004 May 6;361(1-3):258-61).*

Acupuncture is probably beneficial for anything that could be considered a stress-related disorder and can potentially help with the stress associated with any type of affliction. Acupuncture treatment is even helpful for post-traumatic stress disorder (PTSD). *Hollifield M, Sinclair-Lian N, Warner TD, Hammerschlag R, "Acupuncture for Posttraumatic Stress Disorder: A Randomized Controlled Pilot Trial,"*The Journal of Nervous and Mental Disease*, June 2007*. Field physicians in the U.S. Army are using acupuncture for mild cases of traumatic brain injury and not-so-mild cases of PTSD. The most recent Veterans Affairs clinical guidance recommends acupuncture as a supplementary therapy for PTSD, anxiety, pain, and insomnia.

Placebo?

Critics point to evidence that acupuncture is only a placebo and that sham acupuncture is equally effective. A study with cancer patients suffering from nausea during radiation treatment responded favorably to acupuncture needles whether they were inserted or just placed on the point at the skin surface. Vetenskapsrådet *(The Swedish Research Council) (2008, December 1). "Acupuncture Just As Effective Without Needle Puncture, Study Shows,"* ScienceDaily. *Retrieved February 11, 2012, from http://www.sciencedaily.com /releases/2008/12/081201082353.htm).*

Studies on acupuncture for headaches revealed similar findings. *Linde K, Allais G, Brinkhaus B, Manheimer E, Vickers A, White AR, "**Acupuncture for tension-type headache,**" Cochrane Database of Systematic Reviews, Issue 1. Article No.: CD007587 DOI: 10.1002/14651858.CD007587; Linde K, Allais G, Brinkhaus B, Manheimer E, Vickers A, White AR, "**Acupuncture for migraine prophylaxis,**" Cochrane Database of Systematic Reviews, 2009, Issue 1, Article No.: CD001218 DOI: 10.1002/14651858.CD001218.pub2.*

In the Japanese acupuncture tradition, making contact at the point without insertion is often considered the preferred method of treatment. Your correspondent, acting as an interpreter for a British researcher presenting at a medical conference at Tsukuba University near Tokyo, translated his concept of "placebo acupuncture" to an international group of doctors and researchers. The Japanese researchers visibly tightened up. The tension was palpable as I explained to the presenter that the Japanese researchers consider the light contact or very shallow needle insertion to be the correct therapeutic dose and the deeper and more traumatic insertion to be less effective and even harmful. Acupuncture points are also frequently treated with laser frequencies, sound waves, magnets, finger pressure, and even emitted *qi* in qi gong treatment.

Animal studies also dispute the placebo hypothesis. One recent study showed that acupuncture in test animals reduced neurochemicals markers for stress. *Eshkevari L, Egan R, Phillips D, et al., "**Acupuncture at ST36 prevents chronic stress-induced increases in neuropeptide Y in ra,**" Experimental Biology and Medicine, 2011; DOI: 10.1258/ebm.2011.011224*

Researchers have also suggested that the effects of acupuncture may be amplified by the expectation of benefit. According to Dr. Bruce Rosen of Harvard Medical School, "Expectation seems to be as powerful an influence on reduction in pain as acupuncture needling, though it appears to work in a different network in the brain that may be complementary." *Research reference: Kong J, Kaptchuk TJ, Polich G, et al., "Expectancy and treatment interactions: a dissociation between acupuncture analgesia and expectancy evoked placebo analgesi,"*NeuroImage*,2009;45(3):940–949*. It is difficult to imagine any procedure not benefited by positive expectations, but it is especially difficult to square this notion of positive benefits anticipated from acupuncture with the almost universal deeply-seated fear of needles people have, a fear that often dates back to painful childhood medical encounters.

But researchers today are approaching acupuncture research in an objective and fair-minded way. Dr. Rosen states that "There's something about the specifics of acupuncture that seem to evoke a more dramatic response in certain parts of the brain than other kinds of sensory stimuli. It suggests there's something special about acupuncture that's worth trying to understand."

Etc., Etc.

Patient satisfaction with acupuncture is high. In a nation-wide survey of acupuncture users, conducted by medical anthropologist Dr. Claire M. Cassidy, 91.5% reported "disappearance" or "improvement" of symptoms after their treatment, 84% see their MDs less often, 79% used fewer prescription drugs, and 70% were able to avoid previously recommended surgery.

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Clinical research has shown evidence of beneficial effects from acupuncture for carpal tunnel syndrome, hot flashes from prostate cancer treatment, dry mouth from cancer chemotherapy, polycystic ovary syndrome, depression, urinary incontinence, various types of pain (back pain, pelvic pain, arthritis pain, headaches, including migraines, cancer pain, diabetic neuropathic pain, premenstrual pain, post-surgical pain and fibromyalgia), appetite control, drug-addiction withdrawal symptoms, insomnia, an improved success rate with in-vitro fertilization, and even the itching of eczema.

Health Bits and Pieces (HFN 31:4)

Written by Dan Kenner, Ph.D., L.Ac.

Prostate cancer is the most widely diagnosed cancer in America. Men have a 17% risk for getting the problem during their lifetime. The purpose of the prostate gland is to secrete an alkaline fluid to help mobilize the movement of seminal vesicle fluid and sperm through the male reproductive tract. All fluids that circulate in the body are alkaline; otherwise they stop moving and stagnate.

We know that lifestyle makes a difference. The rates of breast, colon, and prostate cancer in the U.S. are from 7 to 60 times higher than in Asia. We know that Asian men who die before the age of 50 of causes *other* than cancer have *just as many* precancerous microtumors as men in the West. Something in their diet or lifestyle prevents these microtumors from developing into cancer; but the cancer rate of Asian men who have settled in the West catches up within a generation or two. And when Asians did develop cancer, their tumors were much less aggressive than Westerners'. In fact, wherever green tea is drunk abundantly, there is a lower incidence of cancer. There are some benefits from herbs such as African prune, Saw palmetto, and beta-sitosterol. The herb bearberry – also known by its Latin name, uva ursi – has a powerful anti-inflammatory effect on the prostate, but following is some research that is less well known. Here are two supplements you cannot afford to ignore if you are concerned about prostate health: green tea and grape seed extract.

Green Tea

Taking green-tea capsules virtually wiped out the development of prostate cancer in men at high risk according to a study in Parma, Italy, with over 70 men who had premalignant lesions, "cancer seeds," and were at risk for full-blown prostate cancer. They had one group of men taking 600 mg a day of concentrated green tea catechins, containing 300 mg of the main one (called EGCG) for one year. Another group took a placebo. After a year, only one man in the green-tea group developed prostate cancer compared to 9 men (28%) of the placebo group. So, green tea was nearly 90% effective in preventing prostate cancer. 300 mg of EGCG is the amount you would get from drinking three cups of brewed green tea. Green tea can also help prevent dementia from chemotherapy.

Bettuzzi S, Brausi M, Rizzi F, Castagnetti G, Peracchia G, Corti A, "Chemoprevention of human prostate cancer by oral administration of green tea catechins in volunteers with high-grade prostate intraepithelial neoplasia: a preliminary report from a one-year proof-of-principle study," Cancer Research *2006 Jan 15;66(2):1234-40.*

Grape Seed Extract

An epidemiological study in Washington State found that men who used grape seed extract reduced their risk of developing prostate cancer by 41%. The participants were 35,239 male members, 50-76 years of age, in a study called the "VITamins And Lifestyle (VITAL) cohort." This study is designed to investigate the associations of the use of vitamin, mineral, and specialty supplements with cancer risk. Grape seed extract was the only one of the supplements surveyed showing a clear risk reduction for prostate cancer. No comparable risk reduction was noted from the use of Coenzyme Q-10, fish oil, garlic, ginkgo biloba, ginseng, or saw palmetto.

Brasky T, Kristal A, Navarro S, et al., "Specialty Supplements and Prostate Cancer Risk in the VITamins And Lifestyle (VITAL) Cohort," Nutrition and Cancer *2011 May; 63(4): 573-582, doi: 10.1080/01635581.2011.553022.*

Diet Plus Flax Seed

There is also evidence that the progression of prostate cancer may be slowed by dietary changes. One study published in the Journal of Urology found that tumor cells from men taking flaxseed in combination with a low-fat diet appeared to be growing more slowly and dying more quickly than those of the control group.

Demark-Wahnefried W, Polascik TJ, George SL, et al., "Flaxseed supplementation (not dietary fat restriction) reduces prostate cancer proliferation rates in men presurgery," Cancer Epidemiol Biomarkers Prev. *2008 Dec;17(12):3577-3587; Demark-Wahnefried W, Price DT, Polascik TJ, Robertson CN, Anderson EE, Paulson DF, Walther PJ, Gannon M, Vollmer RT, "Pilot study of dietary fat restriction and flaxseed supplementation in men with prostate cancer before surgery: exploring the effects on hormonal levels, prostate-specific antigen, and histopathologic features,"* Urology *2001;58:47-52.*

Beljanski's Research

From France there is the Beljanski treatment. Dr. Mirko Beljanski, a biologist who studied DNA and RNA at the Pasteur Institute in Paris, France, for many years, discovered two herbs that have DNA repair properties. He discovered that alkaloids of the plant *Rauwolfia vomitoria* selectively penetrate cancer cells and prevent the duplication of cancerous DNA. *Rauwolfia vomitoria* root has been used for centuries in India and Africa for the treatment of a variety of disorders including insomnia and psychiatric disorders. An alkaloid from the *Pao pereira* tree, native to Brazil, was also found to have the same anticancer properties as well as an antiviral activity and able to penetrate the blood-brain barrier because of its small molecular size. These are substances that can stop tumor growth as well as prevent cancer and promote longevity. The herbs often give symptomatic relief to men with prostate swelling and frequent urination whether there is cancer present or not. In the U.S., it has been the subject of research trials at Columbia University Department of Holistic Urology.

Bemis D, Capodice J, Katz A, Buttyan R, "Anti-prostate cancer activity of B-carboline alkaloid enriched extract from Rauwolfia vomitoria," International Journal of Oncology *29: 1065-1073 (2006); Bemis D, Capodice J, Desai M, Katz A, Buttyan R, "Beta-Carboline Alkaloid-Enriched Extract from the Amazonian Rain Forest Tree Pao Pereira Suppresses Prostate Cancer Cells,"* Journal of the Society for Integrative Oncology, *Vol.7, No.2 (Spring), 2009: pp 59-65.*

GCP (Genistein concentrated polysaccharide)

From Japan there is a product called GCP, which is a combination of cultured mushroom and soy isoflavones extracts. Research at the University of California at Davis on GCP showed that using it could extend the life expectancy of some prostate-cancer patients. They claim that the men who have the highest probability to benefit from GCP are those with metastatic prostate cancer. According to UC Davis Comprehensive Cancer Center Director Dr. Ralph de Vere

White, “We want to see up to 75 percent of metastatic prostate cancer patients lower their PSA levels, and GCP holds promise of accomplishing this goal. If that happens, it would probably be a greater therapy than any drug today.”

The study focused on how GCP inhibits cancer-cell survival despite testosterone deprivation, which is a common treatment for prostate cancer. Based on their findings, the researchers hypothesized that patients with a weak response to androgen-deprivation therapy may benefit from receiving GCP concurrently.

Mooso B, Vinall R, Tepper C, et al., “Enhancing the effectiveness of androgen deprivation in prostate cancer by inducing Filamin A nuclear localization,” Endocrine Related Cancer, *2012 Nov 9;19(6):759-77. doi: 10.1530/ERC-12-0171. Print 2012 Dec.*

Red Clover Extract (standardized to 40% isoflavones)

A research report suggests that dietary isoflavones may halt the progression of prostate cancer by inducing apoptosis in low-to-moderate-grade tumors, potentially contributing to lower incidence of clinically significant disease in Asian men.

Jarred R, et al., “Induction of apoptosis in low to moderate-grade human prostate carcinoma by red clover-derived dietary isoflavones,” Cancer Epidemiology, Biomarkers & Prevention *2002 Dec;11(12):1689-96.*

Vitamin E

In some studies, Vitamin E has been shown to have a deleterious effect on cancer prevention. This conclusion is based upon studies of synthetic alpha-tocopherol. Vitamin E is not one compound but eight: four tocopherol isomers and four tocotrienol isomers. While some population studies have suggested that Vitamin E protects against cancer formation, many large-scale studies in which people received supplements of alpha-tocopherol have not demonstrated an anti-cancer effect. The lack of demonstrable cancer-preventative effects of Vitamin E could be because high doses of alpha-tocopherol deplete levels of gamma-tocopherol. Vitamin E should probably be referred to as “Vitamin E complex,” just as Vitamin B is referred to. More thorough research has shown that a gamma-tocopherol-rich mixture of tocopherols is a very promising cancer-preventive agent and warrants extensive research.

Ju J, Picinich S, Yang Z, et al., “Cancer-preventive activities of tocopherols and tocotrienols,” Carcinogenesis *2010 April; 31(4): 533–542. Published online 2009 September 11. doi: 10.1093/carcin/bgp205.*

Pelvic congestion

The prostate gland has the poorest circulation of any gland or area in your body. Common sense tells us that increasing circulation with exercise will bring needed oxygen and nutrients to the prostate and help it to function normally. Lack of exercise and progressive weight gain are blatant enemies. Walking three miles a day will help prevent and relieve many cases of pelvic congestion. A man’s risk of prostate cancer decreases in proportion to the amount of exercise he engages in. Men who reported more hours per week of exercise were significantly less likely to have cancer on biopsy. Investigators from Duke University at the Durham Veterans Affairs Medical Center found that men who regularly engaged in moderate activity – anything equivalent to walking at a moderate pace for several hours per week – were significantly less likely to be diagnosed with prostate cancer. If they did develop prostate cancer, it was more likely to be a less virulent form of the disease.

Antonelli J, Jones L, Bañez L, et al., "Exercise and prostate cancer risk in a cohort of veterans undergoing prostate needle biopsy," Urology *2009 Nov;182(5):2226-31. doi: 10.1016/j.juro.2009.07.028. Epub 2009 Sep 16.*

Surgery alternative

An alternative to surgery is a relatively new procedure called High-Intensity Focused Ultrasound (HIFU). The ultrasound destroys cancerous tissue by heat, rather than by excavation and cutting. Its precision allows the surgeon to accurately target the tissue to be destroyed without damaging surrounding tissues, thus reducing the overall trauma. HIFU is not yet widely available in the U.S.; but it is approved for use in Europe, Latin America, the Caribbean, China, and Japan. FDA clinical phase trials I and II have been performed in the United States, and plans are underway to start the final Phase III FDA clinical trials. Over 13,000 men have been treated with HIFU worldwide. If you want to consider this treatment, you should thoroughly discuss your case with your urologist to determine its appropriateness. Neither *Health Freedom News* nor I are suggesting that any such medical care or treatment be conducted without competent medical advice and supervision.

Health Bits and Pieces (HFN 31:3)

Written by Dan Kenner, Ph.D., L.Ac.

The myelin sheath is a protective covering on the nerves, even the nerves of the brain. Damaged or destroyed myelin sheaths impede the nerves from sending messages to other parts of the nervous system. This causes a loss of functioning to those areas of the peripheral nervous system and also in the brain itself. Myelin is a white, fatty substance that acts like an insulator for nerve fibers and that contains and directs their electrical impulses. Myelin is made by Schwann cells in the peripheral nerves and by cells called oligodendrocytes in the central nervous system. In a disease of the central nervous system like multiple sclerosis, loss of myelin results in erratic nerve signals that cause weakness or paralysis, impaired sensation, vision problems, and lack of coordination.

The most common acquired disease (non-congenital) that destroys the myelin sheath is multiple sclerosis but recent research shows that demyelination is also a feature of Alzheimer's, Parkinson's, and a list of other more rare diseases. Although there is no cure for these diseases, there are therapies that help to rebuild the myelin sheath and help to return the brain to a normal functioning state.

Until recent years medical science believed that the nervous system was not able to repair itself, but it is now known that this is not true. The ability of the body to repair the myelin sheath has implications for several nervous-system diseases that have been considered incurable.

Foods high in choline and inositol like eggs, beef, beans, and some nuts are important for myelin rebuilding. Vitamin B-1, also called thiamine, and Vitamin B-12 are physical components of the myelin sheath. Healthy oils from olives and avocado are also essential. Stem-cell research and environmental medicine may ultimately provide the answer for many nervous system disorders, but nutritional medicine will also play a necessary role.

Vitamins and Minerals

Vitamin B-12 is part of the composition of the myelin sheath. Deficiencies of Vitamin B-12 have been found in the blood and cerebrospinal fluid of patients with demyelination. Vitamin B-12 has a very important role in the formation and function of myelin. Vitamin B-12 deficiency compromises the ability of the body to repair the damaged myelin after an attack to the nerve tissue. Blood levels of Vitamin B-12 may not accurately reflect the availability of Vitamin B-12; that is, a person with blood test results that show normal levels may actually be deficient. Some doctors consider the normal range of B-12 to be much higher than the standard blood tests measure, so a value low in the normal range would still be considered insufficient. Another way to determine if B-12 is deficient is to measure levels of the chemical homocysteine. If homocysteine, a cardiovascular risk factor, is elevated, then B-12 can be considered to be functionally deficient.

Miller A, Korem M, Almog R, Galboiz Y, "Vitamin B-12, demyelination, remyelination and repair in multiple sclerosis," *Journal of Neurological Science* (2005) Volume 233, Issue 1, Pages 93-97.

Researchers have shown that on average, people with myelin-sheath degeneration are severely Vitamin-D deficient. This may be one reason that myelin-sheath damage is more prevalent in northern latitudes, where people get less sun exposure. Populations that eat a lot of cold-water

fish, like herring, salmon, mackerel and sardines, have a lower incidence of myelin-sheath degeneration even when they live in colder northern climates. It is necessary to take Vitamin D3 or cholecalciferol, which is the natural form of vitamin.
Chabas J-F, Stephan D, Marqueste T, Garcia S, Lavaut M-N, et al., “Cholecalciferol (Vitamin D_3) Improves Myelination and Recovery after Nerve Injury,” (PLoS ONE *8(5):e65034. doi:10.1371/journal.pone.0065034.*

Using nutritional magnesium in a novel technique to promote the regeneration of nerve cells across the site of severe spinal cord injury, researchers have restored bladder function in paralyzed adult rats. The rats were not able to walk again, but the restoration of bladder control was deemed significant. Magnesium supplementation has been shown to significantly improve functional recovery in various neurological disorders.
Pan H, Sheu M, Su H, et al, “Magnesium supplement promotes sciatic nerve regeneration and down-regulates inflammatory response,” Magnesium Research, *2011 Jun;24(2):54-70. doi: 10.1684/mrh.2011.0280.*

Amino Acids
A study showed that the amino acid compound acetyl l-carnitine works to regenerate the myelin sheath of nerves and even help produce new nerve fibers. It also appears to improve the function of important synapses and helps to re-establish innervation of nerves to target organs.
Wilson A, Hart A, Wiberg M, Terenghi G, “Acetyl-l-carnitine increases nerve regeneration and target organ reinnervation - a morphological study,” Journal of Plastic Reconstructive and Aesthetic Surgery, *2010 Jul;63(7):1186-95, doi: 10.1016/j.bjps.2009.05.039. Epub 2009 Aug 6.*

Glutathione is severely deficient in almost all patients with chronic neurological disorders. Supplementing glutathione either intravenously, with liposomal glutathione or orally with glutathione precursors such as non-denatured whey protein powder can have remarkable effects. Intravenous infusions of glutathione have resulted in striking benefits to patients with Parkinson’s disease.
Cammer W, Tansey F, Abramovitz M, Ishigaki S, Listowsky I, “Differential localization of glutathione-S-transferase Yp and Yb subunits in oligodendrocytes and astrocytes of rat brain,” Journal of Neurochemistry, *1989; Mar;52(3):876-83.*

Other Nutrients
Lecithin is an essential ingredient for myelin sheath regeneration. Lecithin can help improve memory performance and is a source of phosphatidylcholine for the brain and nerves.
Gould R, Dawson R,”Incorporation of newly formed lecithin into peripheral nerve myelin,” Journal of Cell Biology, *1976 March 1; 68(3):480–496. PMCID: PMC2109647.*

Mucopolysaccharides are long chains of sugar molecules that are found throughout the body, often in mucus and in fluid around the joints. A study shows that treatment of rats with mucopolysaccharides stimulates regeneration of peripheral nerves and promotes re-innervation into muscle. Mucopolysaccharide treatment significantly increased the number of muscle fibers re-innervated and also accelerated the restoration of muscle twitch tension elicited by nerve stimulation in rats with crushed sciatic nerves.
Gorio A, Lesma E, Vergani L, Gi Giulio A, “Glycosaminoglycan supplementation promotes nerve regeneration and muscle reinnervation,” European Journal of Neuroscience, *1997 Aug;9(8):1748-53.*

And Hormones

And Hormones

We know that hormones are secreted by the system of endocrine glands, but most of us do not know that there can be other remote sources of hormones outside the glandular system. Evidence from French research shows that progesterone, the so-called pregnancy hormone, may play a role in battling certain nerve diseases and help to repair the damage from them by replacing the myelin sheath.

The research shows that progesterone is synthesized by Schwann cells in the peripheral nervous system, where it promotes myelin formation during nerve regeneration. When researchers added either progesterone or its precursor pregnenolone in the vicinity of damaged nerves, there was a significant increase in the thickness of newly-formed myelin sheaths. The new sheaths appeared normal in structure even when examined under an electron microscope.

Lead researcher Dr. Etienne-Emile Baulieu, a professor at the University of Paris, said that the synthesis and function of progesterone in the nervous system shows that it is more than a classic sex hormone and should also be classified as a neurosteroid. Steroid hormones do not always act as sex hormones, particularly when they have local effects near certain sites where they are made. Vitamin D, for example, is also a steroid hormone. Their work shows that the same compound made in different parts of the body can play totally different roles at different sites. But, most significantly, this research could eventually lead to a breakthrough in using hormone therapy to treat neurological disorders.
Koenig H, Schumacher M, Ferzaz B, Baulieu E, et al, "Progesterone synthesis and myelin formation by Schwann cells," Science, *1995 Jun 9;268(5216):1500-3.*

Health Bits and Pieces (HFN 31:2)

Written by Dan Kenner, Ph.D., L.Ac.

Minerals and Health Department

Many people have a deficiency of the mineral magnesium. Among its many functions in our physiology, magnesium is a hardness factor in bones and keeps muscles flexible. Magnesium is found in dark leafy greens (it's in chlorophyll), nuts and seeds, beans and lentils, whole grains, avocados and dried fruit. Sugar and alcohol deplete magnesium. Magnesium is involved in at least 300 biochemical reactions in the body. A deficiency in magnesium can lead to muscle spasms, cardiovascular disease, high blood pressure, anxiety disorders, migraines, osteoporosis, diabetes, and cerebral infarction.

Magnesium for the Brain

Magnesium and PTSD. Symptoms of post-traumatic stress disorder, or PTSD, can be very persistent. Even early childhood trauma can in some cases persist for decades or even a person's entire lifespan. Low brain levels of magnesium have been associated with various types of cognitive disorders including depression. Magnesium threonate has been found to enhance adaptability in the part of the brain that is responsible for judgment, learning, and memory and that allows changes in the learned fear response.

Abumaria N, Yin B, Zhang L, et al., "Effects of Elevation of Brain Magnesium on Fear Conditioning, Fear Extinction, and Synaptic Plasticity in the Infralimbic Prefrontal Cortex and Lateral Amygdala," The Journal of Neuroscience *(2011) 31(42): 14871-14881; doi: 10.1523/ JNEUROSCI.3782-11.2011.*

Magnesium for Pain (and Migraine)

Individuals who suffer from migraines have been found to be deficient in magnesium. Magnesium supplementation has been found to be an effective way to deal with the recurrence of migraines.

MauskopA, Varughese J, "Why all migraine patients should be treated with magnesium," Journal of Neural Transmission*, 2012 May;119(5):575-9; doi: 10.1007/s00702-012-0790-2. Epub 2012 Mar 18.*

Magnesium for the Heart: Cardiovascular Health

A recent review of cardiovascular disease research studies finds that low magnesium levels – not cholesterol or saturated-fat intake – are the greatest predictor of all aspects of heart disease. Magnesium protects the coronary arteries, relaxes spasms including angina pain, helps to regulate heart rhythm, relaxes stress on the sympathetic nervous system and modulates blood pressure, also through sympathetic regulation.

Teo KK, Yusuf S, "Role of magnesium in reducing mortality in acute myocardial infarction. A review of the evidence," Drugs*, Vol. 46, pp. 347-359, 1993; Teo KK et al., "Effects of intravenous magnesium in suspected acute myocardial infarction: overview of randomized trials,"* British Medical Journal*, Vol. 303, pp. 1499-1503, 1991; Shechter, Michael, et al., "Oral magnesium therapy improves endothelial function in patients with coronary artery disease,"* Circulation, *Vol. 102, November 7, 2000, pp. 2353-58; Ford, Earl S., "Serum magnesium and ischaemic heart disease: findings from a national sample of US adults,"* International Journal of Epidemiology*, Vol. 28, August 1999, pp. 645-51; Onalan, O, et al., "Meta-analysis of* *magnesium therapy for the acute management of rapid atrial fibrillation,"* American Journal of Cardiology, *Vol. 99, June 15, 2007, pp. 1726-32.*

It also makes the bones hard.
Magnesium and testosterone. Age-related testosterone may be a natural deterioration, but it is not necessarily beneficial. Low levels of testosterone are linked to a decrease in muscle mass, changes in blood lipids (including higher cholesterol levels), and increased bone fragility. A recent study found that increasing levels of magnesium can increase testosterone production. This effect can be augmented when magnesium supplementation was combined with exercise.
Cinar V, Polat Y, Baltaci AK, Mogulkoc R, "Effects of Magnesium Supplementation on Testosterone Levels of Athletes and Sedentary Subjects at Rest and after Exhaustion," Biological Trace Element Research *(2011), 140(1): pp 18-23.*

Another important mineral in the diet is lithium
Pharmaceutical lithium is recognized as a treatment for bipolar disorder but most people are not aware that it is also a nutrient mineral. Lithium is found in foods such as grains and vegetables; in some areas, the drinking water also provides significant amounts of the element. Dietary lithium intake depends on the geographical location and the type of foods consumed with a wide range of variability. In animal studies conducted from the 1970s to the 1990s, rats and goats maintained on low-lithium rations were shown to exhibit higher mortality as well as reproductive and behavioral abnormalities. In humans, lithium deficiency diseases have not been clearly identified; but low lithium intake from water supplies has been associated with increased rates of suicide, homicide, and the arrest rates for drug use as well as other crimes. Lithium appears to play an especially important role during early fetal development based upon detection of the high lithium contents of the embryo during the early gestational period. The available experimental evidence now appears to be sufficient to accept lithium as an essential nutrient. A provisional RDA for a 70 kg adult of 1,000 micrograms/day is suggested.

Mental disorders of all kinds, from bipolar syndrome to depression to OCD, can benefit in some way from lithium. Lithium orotate has been shown to reduce manic episodes in bipolar disorder. Lithium orotate also seems to have a beneficial effect on regulating brain neurotransmitters.
Nieper HA, "The clinical applications of lithium orotate. A two years study," Agressologie *(1973) 14(6):407-411; Sartori HE, "Lithium orotate in the treatment of alcoholism and related conditions,"* Alcohol *(1986) 3(2):97-100; O'Donnell T, Rotzinger S, Ulrich M, Hanstock CC, Nakashima TT, Silverstone PH, "Effects of chronic lithium and sodium valproate on concentrations of brain amino acids,"* European Neuropsychopharmacology *2003, 13(4):220-227; Schrauzer GN, "Lithium: occurrence, dietary intakes, nutritional essentiality,"* Journal of the American College of Nutrition *(2002) 21(1):14-21.*

Drugs and Disease Department:

Toxic Effects of Statins
One of the most common toxic effects of statin use is myopathy, muscle pain, and weakness. Statins inhibit the HMG CoA reductase enzyme, the same pathway that participates in the production of both cholesterol and coenzyme Q-10. Since CoQ-10 is absolutely vital to mitochondrial function and energy production, CoQ-10 depletion may contribute to

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Fedacko J, Pella D, Fedackova P. et al., "Coenzyme Q_{10} and selenium in statin-associated myopathy treatment," Canadian Journal of Physiology and Pharmacology, *(2013) 91(2): 165-170, 10.1139/cjpp-2012-0118.*

The use of statins appears to be associated with an increased risk of musculoskeletal injuries, including an increased risk of dislocations, strains, and sprains, according to a new analysis. Researchers suggest the full range of musculoskeletal adverse events might not be fully known and that further studies are needed, especially in active individuals. "These findings are concerning because starting statin therapy at a young age for primary prevention of cardiovascular diseases has been widely advocated," reports Dr. Ishak Mansi (VA North Texas Health Care System, Dallas) and colleagues in a paper published online June 3, 2013, in the *Journal of the American Medical Association: Internal Medicine.*
Mansi I, Frei CR, Pugh MJ, Makris U, Mortensen EM, "Statins and musculoskeletal conditions, arthropathies, and injuries," JAMA Internal Medicine *2013; Vol 173, No. 10; DOI:10.1001/jamainternmed.2013.6184.*

A medication that actually feels good
Ginseng for Cancer Prevention

American ginseng (*Panax quinquefolius*) has been shown to reduce inflammation. The typical American diet results in high levels of systemic inflammation and is associated with an increased risk of developing colon cancer. American ginseng supplementation can prevent or delay the occurrence of colon cancer by its anti-inflammatory and immune-boosting properties.
Dougherty U, Mustafi R, Wang Y, et al., "American ginseng suppresses Western diet-promoted tumorigenesis in model of inflammation-associated colon cancer: role of EGFR," BMC Complementary and Alternative Medicine *(2011) 11:111 doi:10.1186/1472-6882-11-111.*

Health Bits and Pieces (HFN 31:1)

Written by Dan Kenner, Ph.D., L.Ac.

New Wonder Drug

Research on the effects of marijuana (*Cannabis sativa*), including research by the Federal government, goes back to the early 1970s. The early quest was to discover the dreadful hazards of regular use and its properties as a "gateway" to hard drugs. Researchers first looked for carcinogenic properties since the link between tobacco smoke and lung cancer was accepted by that time. Mice implanted with various types of cancer including leukemia were treated with cannabinoids (unique active constituents of marijuana). The results were striking. Cannabinoids, including THC (tetrahydrocannibinol), shrank tumors and extended lifespan in a dose-dependent manner, meaning that these beneficial effects were even stronger at higher doses. *Munson, AE et al., "Antineoplastic Activity of Cannabinoids,"* Journal of the National Cancer Institute, *Sept. 1975, pp. 597-602.*

This research was repeated almost 20 years later at Kaiser-Permanente, a large HMO, in a study sponsored by the National Institute on Drug Abuse (NIDA). Mice and rats were given massive doses of THC in search of carcinogenic or other toxic effects. Again, the test animals had fewer cancers than controls and lived longer, and again in "a dose-dependent manner." *NTP Technical Report on the Toxicology and Carcinogenesis Studies Of 1-Trans-Delta-9-Tetrahydrocannabinol, CAS No. 1972-08-3, in F344/N Rats and B6C3F Mice, Gavage Studies.*

Another animal study showed that metastatic breast-cancer cells became less metastatic with cannabidiol in "a concentration-dependent fashion." This implies that use of marijuana could lengthen survival time even in advanced cases. Quoting from the study: "CBD (cannabidiols) represents the first nontoxic exogenous agent that can significantly decrease Id-1 expression in metastatic breast cancer cells leading to the down-regulation of tumor aggressiveness." And according to lead researcher Sean McAllister, "Cannabidiol offers hope of a non-toxic therapy that could treat aggressive forms of cancer without any of the painful side effects of chemotherapy." *McAllister S, Christian R, Horowitz M, et al., "Cannabidiol as a novel inhibitor of Id-1 gene expression in aggressive breast cancer cells,"* Molecular Cancer Therapeutics*, 2007; 6(11): 2921-2927.*

Dope gets you through times of no money…

But enough about the laboratory research; what about its use in humans? Over the last few years marijuana is being prescribed to cancer patients allowing them to better manage symptoms, particularly nausea, loss of appetite, and pain. But the first clinical study to evaluate the antitumor effect of THC in human beings was carried out in Spain by Guzman *et al.* at Complutense University in 2006. The study found that THC "inhibited tumour-cell proliferation." *Guzmán M, Duarte M, Blázquez C, et al., "A pilot clinical study of Δ^9-tetrahydrocannabinol in patients with recurrent glioblastoma multiforme,"* British Journal of Cancer *(2006) 95: 197–203, doi:10.1038/sj.bjc.6603236, published online 27 June 2006.* Fears of a link to lung cancer have been dispelled by human studies. An epidemiological study followed 65,000 patients at Kaiser Permanente for almost 10 years and found that marijuana smokers who did not use tobacco had no increased risk of lung or any other type of cancer, compared to tobacco smokers who had dramatically higher rates. *Sidney, S. et al., "Marijuana*

Use and Cancer Incidence (California, United States)," Cancer Causes and Control *1997; Vol. 8: 722-728.* A study at UCLA funded by NIDA also found a somewhat lower risk of cancer in even heavy marijuana smokers in comparison with a 20-fold increase of lung-cancer risk in tobacco smokers. *Tashkin D, "Marijuana Use and Lung Cancer: Results of a Case-Control Study,"* American Thoracic Society International Conference*, May 23, 2006.*

…Better than money gets you through times of no dope

Neurologists have discovered that there are neurotransmitters (chemicals that conduct nerve signals) very similar in structure to the active constituents of marijuana, and have named them cannabinoids. This is analogous to the discovery in the 1970s of endorphins, morphine-like chemicals naturally produced in the body, which relieve pain and offer a sense of well-being. The "Endocannabinoid System" (ECS), as it has been named, helps maintain biological systems by communicating potential risk of injury between cells. Cannabinoids relieve certain types of pain that opioids like morphine, codeine, and Vicodin cannot alleviate, such as neurogenic pain that comes from the glia, the support structures of the nerves. *Russo E, "Cannabinoids in the management of difficult to treat pain,"* Journal of Therapeutics and Clinical Risk Management, *2008; 4(1): 245–259, Published online 2008 February, PMCID: PMC2503660.*

Bad News for the Dopers

William Courtney is one doctor who is collecting dramatic case histories of patients recovering from a variety of major medical complaints using raw juice from the marijuana plant. He claims this is the most powerful and effective way to use the plant. The juice has no psychoactive properties. There is no marijuana "high" unless the plant is burned or otherwise heated. So this is an important warning: if you juice the plant, it would be dangerous to heat the juice because the psychoactive effect would be many times stronger than from typical smoking or cooking. The amount of THC in a cup of juice can be much higher than the usual dose, as much as 100 joints (marijuana cigarettes). This could make the user comatose for days. The leaves can be psychoactive even when heated. 90 to 99% of its medicinal action is destroyed with heat. According to Dr. Courtney, "If you heat the plant, you will decarboxylate THC-acid and you will get high, you'll get your 10 mg. If you don't heat it, you can go up to five or six hundred milligrams & use it as a dietary cannabis . . . and push it up to the anti-oxidant and neuro-protective levels which come into play at hundreds of milligrams."

Dr. Courtney is not an advocate of smoking marijuana to get high. He considers THC when heated a "poison." He and his wife Kristen have been collecting anecdotal cases of dramatic improvement in patients with even advanced stages of cancer, cardiovascular disease, and insulin-dependent diabetes. Non-psychoactive raw cannabis shows promise for treating schizophrenia, in the prevention of strokes, and in many other potential medical applications.
Zuardi A, Crippa J, Hallak J, et al., "Cannabidiol, a Cannabis sativa constituent, as an antipsychotic drug," Brazilian Journal of Medical and Biological Research*, (2006) 39: 421-429ISSN 0100-879X Review; Mishima K, Hayakawa K, Abe K, et al., "Cannabidiol prevents cerebral infarction via a serotonergic 5-hydroxytryptamine1A receptor-dependent mechanism,"* Stroke; a Journal of Cerebral Circulation*, 36 (5): 1077–82 (May 2005); Mechoulam R, Peters M, Murillo-Rodriguez E, Hanuš L, "Cannabidiol – Recent Advances,"* Chemistry & Biodiversity *4: 1678–1692 (2007), doi: 10.1002/cbdv.200790147.*
http://www.cannabisinternational.org/ (Dr. Courtney's website is called "Leaves of Grass.").

Dangerous Gateway Drug to a Pharmaceutical Lifestyle

Results of a recent study found that in patients with advanced arteriosclerosis or Type-2 diabetes, coronary-artery calcification "was significantly higher in more frequent statin users than in less frequent users." Another study found that statins increase the incidence of coronary artery plaques containing calcium by 52%. Statin drugs also deplete the body of Coenzyme Q-10, an essential factor for mitochondrial energy production. Mitochondria are cellular organelles that are like batteries. Heart muscle cells contain 100 times as many as ordinary skeletal muscle cells. Statins also damage muscles, nerves, increase diabetes risk, and increase discharge of protein in the urine. Other research shows that there is no reliable evidence that saturated fat causes diabetes, obesity, or heart disease.

Nakazato R, Gransar H, Berman D, et al., "Statins use and coronary artery plaque composition: Results from the International Multicenter CONFIRM Registry," Atherosclerosis, *(2012) Aug 24, Epub 2012 Aug 24. PMID: 22981406; Saremi A, Bahn G, Reaven P, "Progression of Vascular Calcification Is Increased With Statin Use in the Veterans Affairs Diabetes Trial (VADT),"* Diabetes Care, *(2012) Epub 2012 Aug 8, PMID: 22875226; Burlingame B, Nishida C, Uauy R, Weisell R (Guest editors), "Fats and fatty acids in human nutrition, Joint FAO/WHO Expert Consultation,"* Annals of Nutrition & Metabolism, *55 (1-3), 1-308, 2009. (Background papers) Issue release date: September 2009.*

Health Bits & Pieces (HFN 32:4)
Written by Dan Kenner, Ph.D., LAc.

SIXTY YEARS OF CANCER AWARENESS

Let's review what has changed and not changed in the last 60 years in how we regard cancer.

Sixty Years Ago

In 1950, scientists identified cigarette smoking as an important factor in the development of lung cancer. James Watson and Francis Crick determined that the molecular structure of DNA is a double helix. Carl Nordling proposed that cancer cells contain mutations in multiple genes and that cancer-inducing mutations accumulate as a person ages – explaining, in part, why cancer was primarily a disease of the elderly. Scientists already knew that cancer could be caused by chemicals, radiation, and viruses, and that sometimes cancer seemed to run in families. But, as the understanding of DNA and genes increased, they learned that it was the damage to DNA by chemicals and radiation, or the introduction of new DNA sequences by viruses that often led to the development of cancer. As of 2014, the World Health Organization's International Agency for Research on Cancer (IARC) has identified more than 100 chemical, physical, and biological carcinogens. JInternational Agency for Research on Cancer (IARC), Agents Classified by the IARC Monographs, Volumes 1-110, 2014, accessed at http://monographs.iarc.fr/ENG/Classification/ClassificationsGroupOrder. pdf on October 1, 2014.
The Food and Drug Administration approved methotrexate, an antimetabolite derived from folic acid, and 6-mercaptopurine as anticancer drugs. In 1958, Roy Hertz and Min Chiu Li achieved the first complete cure of a human solid tumor by chemotherapy when they used methotrexate to treat a patient with choriocarcinoma, a rare cancer of the reproductive tissue that mainly affects women.
Since that time, chemotherapy has been a mainstay of cancer treatment. Other powerfully toxic chemotherapy drugs such as Cyclophosphamide and 5-FU were introduced. Oncologists personally profit from the sale of chemotherapy drugs. They are the only drugs that any doctor is allowed to personally profit from dispensing. Chemotherapy has an average 5-year survival success rate of just over two percent for all cancers.

Hertz R, Bergenstal D, Lipsett M, Price E, Hilbish T, "Chemotherapy of choriocarcinoma and related trophoblastic tumors in women," Journal of the American Medical Association 1958; 168(7):845-854;
Morgan G, Ward R, Barton M, "The contribution of cytotoxic chemotherapy to 5-year survival in adult malignancies," Clinical Oncology 2004 Dec;16(8):549-60.

What has changed?

In addition to the astronomical growth of scientific data related to health and medicine, there have been important changes in public awareness of medical issues and lifestyle. There are also topics where there has been little significant change. The Quixotic vision that scientific medicine can cure cancer has been consistent and relentless. Cancer today gets couched in military terms of battles, warriors, miracles, and hope. The declaration of a war on cancer in 1972 by Richard Nixon defined the quest of modern medicine to control nature.

Is there progress?

Isn't the incidence of cancer decreasing? Smoking causes one third of cancers and it is the dramatic fall in smoking – from about 40 percent of the population in the 1960s to just about 20 percent now – that has fueled much of the drop in cancer deaths. Some 1.4 million new cancers are diagnosed annually, while approximately 10.5 million people are living with cancer in the U.S. 12.3 million people worldwide will develop cancer this year. About 7.6 million people will die this year worldwide from various types of cancer. Among women, the three most common cancers are lung, breast, and colorectal in developed countries and breast, cervical, and stomach cancer in developing countries.
About 465,000 women will die of breast cancer this year, making it the leading cause of cancer death among women worldwide.

(See WHO Cancer Fact Sheet No. 297 at http://www.who.int/mediacentre/factsheets/fs297/en/)
According to French researchers, the incidence of cancer is expected to increase by more than 75% by the year 2030 in developed countries, and over 90% in developing nations. The study is published online first in the Lancet Oncology.
Rattue, Grace, "Cancer Rates Expected To Increase 75% By 2030," Medical News Today, MediLexicon, Intl., 1 Jun 2012. Web. 21 Dec 2014. <http://www.medicalnewstoday.com/articles/246061.php>

Denial

Once cancer starts to spread to other parts of the body – a process called metastasis – it becomes much more difficult to treat. Cancer happens when normal cells start to behave abnormally, grow out of control, and multiply to form lumps called tumors. If untreated, cancer cells can escape their primary tumors, travel to other parts of the body and grow into secondary cancers or metastases. Metastases are the major cause of death from cancer. If we are to significantly improve cancer treatment, we need a better understanding of metastasis. One of the areas researchers are keenly investigating is what helps cancer cells escape primary tumors and set up new sites elsewhere in the body. Only about 0.5% of cancer research is on metastasis. Research is overwhelmingly devoted to tumor reduction, getting rid of the tumor no matter what the cost. Metastasis forces us to see cancer as a whole-body phenomenon, not a local condition affecting a single organ.

Sleeman J. Steeg P, "Cancer metastasis as a therapeutic target," European Journal of Cancer, 2010; 46 (7): 1177-1180 DOI: 10.1016/j.ejca.2010.02.039.

Causes of Death

Tumor reduction or removal is the main goal of surgery, radiation, and chemotherapy. The idea that this is valid treatment is being called into question. Cachexia, also called wasting syndrome, is the name for extreme thinness and weakness due to atrophy. Until recently, cachexia has been interpreted as a kind of "autoconsumption": the body "consumes" itself while trying to supply the energy needs of the constantly growing tumor. Tumors of any size can actually cause cachexia, even small ones, and even at very early stages of tumor development. The fact that it is the cachexia associated with the tumor, rather than the tumor itself, that causes the death of one third of cancer patients has encouraged the study of this syndrome in recent years.

Petruzzelli M, Schweiger M, Schreiber R, et al., "A Switch from White to Brown Fat Increases Energy Expenditure in Cancer-Associated Cachexia," Cell Metabolism (2014) Volume 20, Issue 3, p. 433-447, 2 September 2014.

Untreated cancer and survival

The late Dr. Hardin B. Jones, Professor of Medical Physics and Physiology at the University of California, Berkeley, made a study lasting 25 years of the life span of cancer patients, and had concluded that untreated patients do not die sooner than patients receiving orthodox treatment (surgery, radiation, and chemotherapy), and in many cases they live longer. Dr. Jones delivered his bombshell report at the American Cancer Society's (11th) Science Writers' Seminar (March 28-April 2, 1969), in which he confirmed what he had written as early as 1955, in his classic paper "Demographic Consideration of the Cancer Problem," published in Transactions of the New York Academy of Sciences (Series II, Vol. 18, pp. 298-333). (See http://www.rethinkingcancer.org/resources/magazine-articles/8_11-12/the-untreated- live-longer.php)

Cancer Prevention – The Gold Standard

Research has repeatedly shown that lifestyle can prevent cancer as well as mitigate and support recovery in diagnosed cases. Here is a summary:

(1) Lose weight! Change your diet! Reduce or eliminate your processed food, sugar/fructose, and grain-carbohydrate intake. Consider reducing your protein levels to one gram per kilogram of lean body weight. It would be unusual for most adults to need more than 100 grams of protein and most likely close to half that. Normalize your ratio of omega-3 to omega-6 fats by taking a high-quality fish oil and reducing your intake of most processed vegetable oils, especially soy and canola. Avoid frying or charbroiling your food. Boil, poach, or steam your foods instead. Eat salads and freshlymade juices. Reduce food intake in general. According to Dr. Stephen Freedland, associate professor of Urology and Pathology at the Duke University Medical Center, "undernutrition without malnutrition" consistently improves survival in animals with cancer and extends lifespan by as much as 30 percent. Alternate-day fasting has also been shown to reduce cancer rates by reducing

cell proliferation. Varady K, Hellerstein M, "Alternate-day fasting and chronic disease prevention: a review of human and animal trials1, 2, 3," American Journal of Clinical Nutrition July 2007 Vol. 86, No. 1, at pp. 7-13.

(2) Get regular exercise! One of the primary reasons exercise works is that it drives
levels is one of the most powerful ways to reduce your cancer risks. The trick about exercise, though, is understanding how to use it as a precise tool. This ensures you are getting enough to achieve the benefit, not too much to cause injury, and the right variety to balance your entire physical structure and maintain strength and flexibility, and aerobic and anaerobic fitness levels. If you have limited time, then Peak Fitness exercises are your best bet; but ideally you should have a good strength-training program as well. A 2005 study by researchers at Harvard Medical School found that breast-cancer patients who exercised moderately for three to five hours a week cut their odds of dying from cancer by about half, compared to sedentary patients.
Holmes M, Chen W, Feskanich D, et al., "Physical Activity and Survival After Breast Cancer Diagnosis," Journal of the American Medical Association 2005;293(20): 2479-2486. doi:10.1001/jama.293.20.2479.

(3) Normalize your Vitamin-D level!
Get appropriate sun exposure, and consider careful supplementation when this is not possible. However, if you are taking oral Vitamin D, you also need to make sure you are taking Vitamin K2 as well, as K2 deficiency is actually what produces the symptoms of Vitamin- D toxicity, which includes inappropriate calcification that can lead to hardening of your arteries. To learn more, please see my previous article: “What You Need to Know About Vitamin K2, D, and Calcium.” If you take oral Vitamin D and have cancer, it would be very prudent to monitor your Vitamin-D blood levels regularly. Sharif B. Mohr S, Gorham E, Kim J, et al., "Meta-analysis of Vitamin D Sufficiency for Improving Survival of Patients with Breast Cancer," Anticancer Research March 2014; Vol. 34, No. 3, at pp. 1163-1166.

(4) Get regular, good sleep. A disrupted sleep rhythm may influence cancer progression through shifts in hormones like serotonin and melatonin. Sephton S, Spiegel D, "Circadian disruption in cancer: a neuroendocrine-immune pathway from stress to disease?" Brain, Behavior and Immunity 2003 Oct;17(5):321-8.

(5) Reduce your exposure to environmental toxins like pesticides, household chemical cleaners, synthetic air fresheners, and air pollution. Limit your exposure and provide protection for yourself from radiation produced by cell phones, towers, base stations, and WiFi stations. Cardis E, Richardson L, Deltour I, et al., “The INTERPHONE study: design, epidemiological methods, and description of the study population," European Journal of Epidemiology 2007;22:647-664; Sadetzki S, Chetrit A, Jarus-Hakak A, et al., “Cellular phone use and risk of benign and malignant parotid gland tumors— a nationwide case-control study,” American Journal of Epidemiology 2008;167:457-467; and Lennart Hardell L, Carlberg M, Mild K, “Re-analysis of risk for glioma in relation to mobile telephone use: comparison with the results of the Interphone international casecontrol study," International Journal of Epidemiology (2010) doi: 10.1093/ije/dyq246.

(6) Heal Stress and Trauma Stress as a cause of cancer is controversial, but there is abundant evidence that stress compromises immune function and can even promote the development of existing tumors. Ohio State University: “Stress Hormones May Play New Role In Speeding Up Cancer Growth.” Science

(5) Reduce your exposure to environmental toxins like pesticides, household chemical cleaners, synthetic air fresheners, and air pollution. Limit your exposure and provide protection for yourself from radiation produced by cell phones, towers, base stations, and WiFi stations. Cardis E, Richardson L, Deltour I, et al., “The INTERPHONE study: design, epidemiological methods, and description of the study population," European Journal of Epidemiology 2007;22:647-664; Sadetzki S, Chetrit A, Jarus-Hakak A, et al., “Cellular phone use and risk of benign and malignant parotid gland tumors— a nationwide case-control study,” American Journal of Epidemiology 2008;167:457-467; and Lennart Hardell L, Carlberg M, Mild K, “Re-analysis of risk for glioma in relation to mobile telephone use: comparison with the results of the Interphone international casecontrol study," International Journal of Epidemiology (2010) doi: 10.1093/ije/dyq246.

(6) Heal Stress and Trauma Stress as a cause of cancer is controversial, but there is abundant evidence that stress compromises immune function and can even promote the development of existing tumors. Ohio State University: “Stress Hormones May Play New Role In Speeding Up Cancer Growth.” Science Daily, 3 November 2006, at www.sciencedaily.com/ releases/2006/11/061101151408.htm.

(7) Supplement! Some of the supplements with the strongest case for a cancer-prevention effect and possible therapeutic properties include iodine, green tea, Vitamin D, lentinan and alpha-glucans from shiitake mushrooms (AHCC, MGN-3 arabinoxylin), curcumin from turmeric (contraindicated for some chemotherapy, e.g. not to be used with Adriamycin, beneficial with 5-FU), Coenzyme Q- 10, and proteolytic enzymes. Proteolytic enzymes have been proven to be highly effective in supporting a normal inflammation response in the human body. Leading researchers, doctors, and scientists now believe that maintaining a healthy, normal inflammation response is the key to maintaining good health. When there is irritation, injury, or toxins in the body, the normal inflammation response sends white blood cells to the area, resulting in cellular debris. Because the enzymes support the normal post-inflammatory break-up and elimination of cellular debris, they are also extremely useful for recovery from surgery and even preventing metastasis caused by surgery. Shrivastava A, Tiwari M, Sinha R, et al., "Molecular iodine induces caspase-independent apoptosis in human breast carcinoma cells involving the mitochondria-mediated pathway," Journal of Biological Chemistry 2006; Jul 14;281(28):19762-71. Epub 2006 May 5; Trudel D, Labbé D, Bairati I, et al., "Green tea for ovarian cancer prevention and treatment: a systematic review of the in vitro, in vivo and epidemiological studies," Gynecologic Oncology 2012 Sep;126(3):491-8. doi: 10.1016/j.ygyno.2012.04.048. Epub 2012 May 4; Ghoneum M, Wimbley M, Salem F, et al., "Immunomodulatory and anticancer effects of Active Hemicellulose Compound (AHCC)," International Journal of Immunotherapy XI(1) 23-28 (1995); Reuter S, Gupta S, Park B, Goel A, Aggarwal B, "Epigenetic changes induced by curcumin and other natural compounds," Genes and Nutrition, 2011 May;6(2):93-108. doi: 10.1007/ s12263- 011-0222-1. Epub 2011 Apr 24; Lockwood K, Moesgaard S, Hanioka T, Folkers K, "Apparent partial remission of breast cancer in “high risk” patients supplemented with nutritional antioxidants, essential fatty acids and coenzyme Q10," Molecular Aspects of Medicine 15 Suppl: S231-S240, 1994; and Van der Bij G, Oosterling, Beelen R, et al., "The perioperative period is an underutilized window of therapeutic opportunity in patients with colorectal cancer," Annals of Surgery 2009; May;249(5):727-34.

Health Bits and Pieces (HFN 31:3)

Written by Dan Kenner, Ph.D., L.Ac.

The myelin sheath is a protective covering on the nerves, even the nerves of the brain. Damaged or destroyed myelin sheaths impede the nerves from sending messages to other parts of the nervous system. This causes a loss of functioning to those areas of the peripheral nervous system and also in the brain itself. Myelin is a white, fatty substance that acts like an insulator for nerve fibers and that contains and directs their electrical impulses. Myelin is made by Schwann cells in the peripheral nerves and by cells called oligodendrocytes in the central nervous system. In a disease of the central nervous system like multiple sclerosis, loss of myelin results in erratic nerve signals that cause weakness or paralysis, impaired sensation, vision problems, and lack of coordination.

The most common acquired disease (non-congenital) that destroys the myelin sheath is multiple sclerosis but recent research shows that demyelination is also a feature of Alzheimer's, Parkinson's, and a list of other more rare diseases. Although there is no cure for these diseases, there are therapies that help to rebuild the myelin sheath and help to return the brain to a normal functioning state.

Until recent years medical science believed that the nervous system was not able to repair itself, but it is now known that this is not true. The ability of the body to repair the myelin sheath has implications for several nervous-system diseases that have been considered incurable.

Foods high in choline and inositol like eggs, beef, beans, and some nuts are important for myelin rebuilding. Vitamin B-1, also called thiamine, and Vitamin B-12 are physical components of the myelin sheath. Healthy oils from olives and avocado are also essential. Stem-cell research and environmental medicine may ultimately provide the answer for many nervous system disorders, but nutritional medicine will also play a necessary role.

Vitamins and Minerals

Vitamin B-12 is part of the composition of the myelin sheath. Deficiencies of Vitamin B-12 have been found in the blood and cerebrospinal fluid of patients with demyelination. Vitamin B-12 has a very important role in the formation and function of myelin. Vitamin B-12 deficiency compromises the ability of the body to repair the damaged myelin after an attack to the nerve tissue. Blood levels of Vitamin B-12 may not accurately reflect the availability of Vitamin B-12; that is, a person with blood test results that show normal levels may actually be deficient. Some doctors consider the normal range of B-12 to be much higher than the standard blood tests measure, so a value low in the normal range would still be considered insufficient. Another way to determine if B-12 is deficient is to measure levels of the chemical homocysteine. If homocysteine, a cardiovascular risk factor, is elevated, then B-12 can be considered to be functionally deficient.

Miller A, Korem M, Almog R, Galboiz Y, "Vitamin B-12, demyelination, remyelination and repair in multiple sclerosis," *Journal of Neurological Science* (2005) Volume 233, Issue 1, Pages 93-97.

Researchers have shown that on average, people with myelin-sheath degeneration are severely Vitamin-D deficient. This may be one reason that myelin-sheath damage is more prevalent in northern latitudes, where people get less sun exposure. Populations that eat a lot of cold-water

fish, like herring, salmon, mackerel and sardines, have a lower incidence of myelin-sheath degeneration even when they live in colder northern climates. It is necessary to take Vitamin D3 or cholecalciferol, which is the natural form of vitamin.
Chabas J-F, Stephan D, Marqueste T, Garcia S, Lavaut M-N, et al., "Cholecalciferol (Vitamin D_3) Improves Myelination and Recovery after Nerve Injury," (PLoS ONE *8(5):e65034. doi:10.1371/journal.pone.0065034.*

Using nutritional magnesium in a novel technique to promote the regeneration of nerve cells across the site of severe spinal cord injury, researchers have restored bladder function in paralyzed adult rats. The rats were not able to walk again, but the restoration of bladder control was deemed significant. Magnesium supplementation has been shown to significantly improve functional recovery in various neurological disorders.
Pan H, Sheu M, Su H, et al, "Magnesium supplement promotes sciatic nerve regeneration and down-regulates inflammatory response," Magnesium Research, *2011 Jun;24(2):54-70. doi: 10.1684/mrh.2011.0280.*

Amino Acids
A study showed that the amino acid compound acetyl l-carnitine works to regenerate the myelin sheath of nerves and even help produce new nerve fibers. It also appears to improve the function of important synapses and helps to re-establish innervation of nerves to target organs.
Wilson A, Hart A, Wiberg M, Terenghi G, "Acetyl-l-carnitine increases nerve regeneration and target organ reinnervation - a morphological study," Journal of Plastic Reconstructive and Aesthetic Surgery, *2010 Jul;63(7):1186-95, doi: 10.1016/j.bjps.2009.05.039. Epub 2009 Aug 6.*

Glutathione is severely deficient in almost all patients with chronic neurological disorders. Supplementing glutathione either intravenously, with liposomal glutathione or orally with glutathione precursors such as non-denatured whey protein powder can have remarkable effects. Intravenous infusions of glutathione have resulted in striking benefits to patients with Parkinson's disease.
Cammer W, Tansey F, Abramovitz M, Ishigaki S, Listowsky I, "Differential localization of glutathione-S-transferase Yp and Yb subunits in oligodendrocytes and astrocytes of rat brain," Journal of Neurochemistry, *1989; Mar;52(3):876-83.*

Other Nutrients
Lecithin is an essential ingredient for myelin sheath regeneration. Lecithin can help improve memory performance and is a source of phosphatidylcholine for the brain and nerves.
Gould R, Dawson R, "Incorporation of newly formed lecithin into peripheral nerve myelin," Journal of Cell Biology, *1976 March 1; 68(3):480–496. PMCID: PMC2109647.*

Mucopolysaccharides are long chains of sugar molecules that are found throughout the body, often in mucus and in fluid around the joints. A study shows that treatment of rats with mucopolysaccharides stimulates regeneration of peripheral nerves and promotes re-innervation into muscle. Mucopolysaccharide treatment significantly increased the number of muscle fibers re-innervated and also accelerated the restoration of muscle twitch tension elicited by nerve stimulation in rats with crushed sciatic nerves.
Gorio A, Lesma E, Vergani L, Gi Giulio A, "Glycosaminoglycan supplementation promotes nerve regeneration and muscle reinnervation," European Journal of Neuroscience, *1997 Aug;9(8):1748-53.*

And Hormones

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Gorio A, Lesma E, Vergani L, Gi Giulio A, "Glycosaminoglycan supplementation promotes nerve regeneration and muscle reinnervation," European Journal of Neuroscience, *1997 Aug;9(8):1748-53.*

And Hormones

We know that hormones are secreted by the system of endocrine glands, but most of us do not know that there can be other remote sources of hormones outside the glandular system. Evidence from French research shows that progesterone, the so-called pregnancy hormone, may play a role in battling certain nerve diseases and help to repair the damage from them by replacing the myelin sheath.

The research shows that progesterone is synthesized by Schwann cells in the peripheral nervous system, where it promotes myelin formation during nerve regeneration. When researchers added either progesterone or its precursor pregnenolone in the vicinity of damaged nerves, there was a significant increase in the thickness of newly-formed myelin sheaths. The new sheaths appeared normal in structure even when examined under an electron microscope.

Lead researcher Dr. Etienne-Emile Baulieu, a professor at the University of Paris, said that the synthesis and function of progesterone in the nervous system shows that it is more than a classic sex hormone and should also be classified as a neurosteroid. Steroid hormones do not always act as sex hormones, particularly when they have local effects near certain sites where they are made. Vitamin D, for example, is also a steroid hormone. Their work shows that the same compound made in different parts of the body can play totally different roles at different sites. But, most significantly, this research could eventually lead to a breakthrough in using hormone therapy to treat neurological disorders.
Koenig H, Schumacher M, Ferzaz B, Baulieu E, et al, "Progesterone synthesis and myelin formation by Schwann cells," Science, *1995 Jun 9;268(5216):1500-3.*

Health Bits and Pieces (HFN 31:2)

Written by Dan Kenner, Ph.D., L.Ac.

Minerals and Health Department

Many people have a deficiency of the mineral magnesium. Among its many functions in our physiology, magnesium is a hardness factor in bones and keeps muscles flexible. Magnesium is found in dark leafy greens (it's in chlorophyll), nuts and seeds, beans and lentils, whole grains, avocados and dried fruit. Sugar and alcohol deplete magnesium. Magnesium is involved in at least 300 biochemical reactions in the body. A deficiency in magnesium can lead to muscle spasms, cardiovascular disease, high blood pressure, anxiety disorders, migraines, osteoporosis, diabetes, and cerebral infarction.

Magnesium for the Brain

Magnesium and PTSD. Symptoms of post-traumatic stress disorder, or PTSD, can be very persistent. Even early childhood trauma can in some cases persist for decades or even a person's entire lifespan. Low brain levels of magnesium have been associated with various types of cognitive disorders including depression. Magnesium threonate has been found to enhance adaptability in the part of the brain that is responsible for judgment, learning, and memory and that allows changes in the learned fear response.

Abumaria N, Yin B, Zhang L, et al., "Effects of Elevation of Brain Magnesium on Fear Conditioning, Fear Extinction, and Synaptic Plasticity in the Infralimbic Prefrontal Cortex and Lateral Amygdala," The Journal of Neuroscience *(2011) 31(42): 14871-14881; doi: 10.1523/ JNEUROSCI.3782-11.2011.*

Magnesium for Pain (and Migraine)

Individuals who suffer from migraines have been found to be deficient in magnesium. Magnesium supplementation has been found to be an effective way to deal with the recurrence of migraines.

MauskopA, Varughese J, "Why all migraine patients should be treated with magnesium," Journal of Neural Transmission*, 2012 May;119(5):575-9; doi: 10.1007/s00702-012-0790-2. Epub 2012 Mar 18.*

Magnesium for the Heart: Cardiovascular Health

A recent review of cardiovascular disease research studies finds that low magnesium levels – not cholesterol or saturated-fat intake – are the greatest predictor of all aspects of heart disease. Magnesium protects the coronary arteries, relaxes spasms including angina pain, helps to regulate heart rhythm, relaxes stress on the sympathetic nervous system and modulates blood pressure, also through sympathetic regulation.

Teo KK, Yusuf S, "Role of magnesium in reducing mortality in acute myocardial infarction. A review of the evidence," Drugs*, Vol. 46, pp. 347-359, 1993; Teo KK et al., "Effects of intravenous magnesium in suspected acute myocardial infarction: overview of randomized trials,"* British Medical Journal*, Vol. 303, pp. 1499-1503, 1991; Shechter, Michael, et al., "Oral magnesium therapy improves endothelial function in patients with coronary artery disease,"* Circulation*, Vol. 102, November 7, 2000, pp. 2353-58; Ford, Earl S., "Serum magnesium and ischaemic heart disease: findings from a national sample of US adults,"* International Journal of Epidemiology*, Vol. 28, August 1999, pp. 645-51; Onalan, O, et al., "Meta-analysis of* *magnesium therapy for the acute management of rapid atrial fibrillation,"* American Journal of Cardiology, *Vol. 99, June 15, 2007, pp. 1726-32.*

It also makes the bones hard.

Magnesium and testosterone. Age-related testosterone may be a natural deterioration, but it is not necessarily beneficial. Low levels of testosterone are linked to a decrease in muscle mass, changes in blood lipids (including higher cholesterol levels), and increased bone fragility. A recent study found that increasing levels of magnesium can increase testosterone production. This effect can be augmented when magnesium supplementation was combined with exercise. *Cinar V, Polat Y, Baltaci AK, Mogulkoc R, "Effects of Magnesium Supplementation on Testosterone Levels of Athletes and Sedentary Subjects at Rest and after Exhaustion,"* Biological Trace Element Research *(2011), 140(1): pp 18-23.*

Another important mineral in the diet is lithium

Pharmaceutical lithium is recognized as a treatment for bipolar disorder but most people are not aware that it is also a nutrient mineral. Lithium is found in foods such as grains and vegetables; in some areas, the drinking water also provides significant amounts of the element. Dietary lithium intake depends on the geographical location and the type of foods consumed with a wide range of variability. In animal studies conducted from the 1970s to the 1990s, rats and goats maintained on low-lithium rations were shown to exhibit higher mortality as well as reproductive and behavioral abnormalities. In humans, lithium deficiency diseases have not been clearly identified; but low lithium intake from water supplies has been associated with increased rates of suicide, homicide, and the arrest rates for drug use as well as other crimes. Lithium appears to play an especially important role during early fetal development based upon detection of the high lithium contents of the embryo during the early gestational period. The available experimental evidence now appears to be sufficient to accept lithium as an essential nutrient. A provisional RDA for a 70 kg adult of 1,000 micrograms/day is suggested.

Mental disorders of all kinds, from bipolar syndrome to depression to OCD, can benefit in some way from lithium. Lithium orotate has been shown to reduce manic episodes in bipolar disorder. Lithium orotate also seems to have a beneficial effect on regulating brain neurotransmitters. *Nieper HA, "The clinical applications of lithium orotate. A two years study,"* Agressologie *(1973) 14(6):407-411; Sartori HE, "Lithium orotate in the treatment of alcoholism and related conditions,"* Alcohol *(1986) 3(2):97-100; O'Donnell T, Rotzinger S, Ulrich M, Hanstock CC, Nakashima TT, Silverstone PH, "Effects of chronic lithium and sodium valproate on concentrations of brain amino acids,"* European Neuropsychopharmacology *2003, 13(4):220-227; Schrauzer GN, "Lithium: occurrence, dietary intakes, nutritional essentiality,"* Journal of the American College of Nutrition *(2002) 21(1):14-21.*

Drugs and Disease Department:

Toxic Effects of Statins

One of the most common toxic effects of statin use is myopathy, muscle pain, and weakness. Statins inhibit the HMG CoA reductase enzyme, the same pathway that participates in the production of both cholesterol and coenzyme Q-10. Since CoQ-10 is absolutely vital to mitochondrial function and energy production, CoQ-10 depletion may contribute to

mitochondrial dysfunction, thus perhaps leading to myopathy. Statins deplete the natural production of coenzyme Q-10 in the liver by its inhibitory effect on liver biosynthesis.
Fedacko J, Pella D, Fedackova P. et al., "Coenzyme Q_{10} and selenium in statin-associated myopathy treatment," Canadian Journal of Physiology and Pharmacology, *(2013) 91(2): 165-170, 10.1139/cjpp-2012-0118.*

The use of statins appears to be associated with an increased risk of musculoskeletal injuries, including an increased risk of dislocations, strains, and sprains, according to a new analysis. Researchers suggest the full range of musculoskeletal adverse events might not be fully known and that further studies are needed, especially in active individuals. "These findings are concerning because starting statin therapy at a young age for primary prevention of cardiovascular diseases has been widely advocated," reports Dr. Ishak Mansi (VA North Texas Health Care System, Dallas) and colleagues in a paper published online June 3, 2013, in the *Journal of the American Medical Association: Internal Medicine.*
Mansi I, Frei CR, Pugh MJ, Makris U, Mortensen EM, "Statins and musculoskeletal conditions, arthropathies, and injuries," JAMA Internal Medicine *2013; Vol 173, No. 10; DOI:10.1001/jamainternmed.2013.6184.*

A medication that actually feels good
Ginseng for Cancer Prevention
American ginseng (*Panax quinquefolius*) has been shown to reduce inflammation. The typical American diet results in high levels of systemic inflammation and is associated with an increased risk of developing colon cancer. American ginseng supplementation can prevent or delay the occurrence of colon cancer by its anti-inflammatory and immune-boosting properties.
Dougherty U, Mustafi R, Wang Y, et al., "American ginseng suppresses Western diet-promoted tumorigenesis in model of inflammation-associated colon cancer: role of EGFR," BMC Complementary and Alternative Medicine *(2011) 11:111 doi:10.1186/1472-6882-11-111.*

Health Bits & Pieces, Spring 2014
(HFN 32.1)

Written By Dan Kenner, Ph.D., L.Ac.

Grape Seed Extract

In the last *Bits & Pieces* column, I reported on how men who used grape-seed extract reduced their risk of developing prostate cancer by 41% according to epidemiological research in Washington. New research shows that in addition to its preventive properties, grape-seed extract can improve outcomes in colon cancer and relieve mucositis, a severe side effect of certain types of chemotherapy. Mucositis is a serious disorder of the gastrointestinal tract that results from cancer chemotherapy. Mucositis in the digestive tract is a possible cause of some of the hypersensitivity that causes discomfort from nausea, constipation, and diarrhea during chemotherapy. Researchers in Australia investigated the effects of administering grape-seed extract and its effect on the severity of chemotherapy in a rat model and its coincident impact on chemotherapeutic effectiveness in colon cancer cells. They found that grape-seed extract was effective at ameliorating 5-Fluorouracil (5FU)-induced intestinal injury.

Cheah K, Howarth G, Bastian S, "Grape seed extract dose-responsively decreases disease severity in a rat model of mucositis; concomitantly enhancing chemotherapeutic effectiveness in colon cancer cells," PLoS One *2014 Jan 21;9(1):e85184. doi: 10.1371/journal.pone.0085184. eCollection 2014.*

Vitamin D for Breast Cancer

A meta-analysis was performed on the relationship between a type of Vitamin D (25(OH)D) and mortality from breast cancer based on five studies. Higher serum concentrations of Vitamin D were associated with a lower rate of fatality on patients with a diagnosis of breast cancer. Patients in the highest 20% of Vitamin D had approximately half the death rate from breast cancer as those in the lowest. The researchers concluded that Vitamin D should be restored to the normal range (30-80 ng/ml) in all patients with breast cancer, and have appropriate monitoring.

Mohr S, Gorham E, Kim J, Hofflich H, Garland C, "Meta-analysis of vitamin D sufficiency for improving survival of patients with breast cancer," Anticancer Research *2014 Mar;34(3):1163-6.*

Vitamin D for Prostate Cancer

Other research on Vitamin D and prostate cancer shows that Vitamin D can slow the progression of prostate cancer and decrease the invasiveness of cancer cells in the prostate. Calcitriol, the active form of Vitamin D, is produced by the body and provides numerous benefits against cancers. This form of Vitamin D encourages cells to either adapt to their organ or commit apoptosis (cell suicide). Calcitriol also limits blood supply to the tumor and reduces the spread of cancer. These may be the roles that Vitamin D plays in prostate cancer, near the beginning and end stages.

Bauer J, Thompson T, et al., "Growth inhibition and differentiation in human prostate carcinoma cells induced by the vitamin D analog 1alpha,24-dihydroxyvitamin D2," Prostate *55(3): 159-67 (2003); Schwartz G, Wang M, et al., "1 alpha, 25-Dihydroxyvitamin D (calcitriol) inhibits the invasiveness of human prostate cancer cells,"* Cancer Epidemiology, Biomarkers and Prevention *6(9): 727-32 (1997).*

Sunshine for Depression?

Vitamin D has long been known as the sunshine vitamin. It is synthesized in the skin from cholesterol in the presence of sunlight. Research in the U.K. suggests that those study participants with blood levels of Vitamin D (as 25(OH)D) between 50 and 85 nmol/l were at lower risk for depression, anxiety, panic, and phobias at mid-life (age 45), compared to subjects with lower or higher concentrations of the vitamin.

Maddock J, Berry D, Geoffroy M, Power C, Hyppönen E, "Vitamin D and common mental disorders in mid-life: cross-sectional and prospective findings," Clinical Nutrition *2013 Oct;32(5):758-64. doi: 10.1016/j.clnu.2013.01.006. Epub 2013 Jan 21.*

Aromatherapy for the Digestive System

Aromatherapy is the use of aromatic essential oils taken not only by inhalation but by massage, in baths, and also orally. There is ample research supporting the oral use of essential oils for various digestive system disorders. Diarrhea attributed to microbial infection, infectious colitis, is estimated at around 99 million episodes per year among adults, one of the most common diagnoses. There are many potential causes, which is one reason for its prevalence. Compared with inflammatory bowel disease (IBD), such as ulcerative colitis, infectious colitis is usually more acute in onset.

Oil of thyme was found to kill the pathogenic microbes *Staphylococcus aureus, Enterococcus faecalis, Pseudomonas aeruginosa, Escherichia coli*, two strains of *Klebsiella pneumonia*, and two strains of *Candida albicans* in vitro. Another study showed that oil of thyme is also antimicrobial against *Listeria monocytogenes*.

Maksimović Z, Milenković M, Vučićević D, Ristić M, "Chemical composition and antimicrobial activity of Thymus pannonicus All. (Lamiaceae)," Central European Journal of Biology *(3)2: 149-154, 2008; Rasooli I, Rezaei MB, Allameh A, "Ultrastructural studies on antimicrobial efficacy of thyme essential oils on Listeria monocytogenes,"* International Journal of Infectious Diseases *2006;10(3):236-41.*

Stomach and duodenal ulcers are attributed to the common microbe *Helicobacter pylori*. Stress, spicy foods, alcohol, tobacco, and some prescription drugs can play a significant role in the occurrence of the condition, but the bacterium *Helicobacter pylori* is now considered to be the primary cause in most cases. Complications include severe symptoms such as vomiting blood, with the color of blood ranging from reddish to blackish in appearance. Another sign of complications is occult bleeding causing stools that are black and tarry. Changes in appetite and weight loss can also occur. Other complications are perforation, with the risk of peritonitis, and scar tissue, which can obstruct movement of food through the digestive tract, causing a sensation of fullness, weight loss, and severe nausea.

Several essential oils have been found to be effective for treating *H. pylori* according to several studies. These include German chamomile (*Matricaria recutita*), sage (*Salvia officinalis*), lemon grass (*Cymbopogon citratus*), lemon verbena (*Lippia citriodora*), caraway (Carum carvi), cumin (*Cumin cymenum*), peppermint (*Mentha piperata*), spearmint (*Mentha spicata*), and clove (*Syzygium aromatica*).

Shikov A, Pozharitskaya O, Makarov V, Kvetnaya A, "Antibacterial activity of Chamomilla recutita oil extract against Helicobacter pylori," Phytotherapy Research *Vol. 22, Issue 2, pages 252-253, Published Online: 28 Aug 2007; Cwikla C, Schmidt K, Matthias A, Bone K, Lehmann R, Tiralongo E, "Investigations into the antibacterial activities of phytotherapeutics against Helicobacter pylori and Campylobacter jejuni," Published Online: 3 Aug 2009; Ohno T, Kita M, Yamaoka Y, Imamura S, Yamamoto T, Mitsufuji S, Kodama T, Kashima K, Imanishi J, "Antimicrobial activity of essential oils against Helicobacter pylori,"* Helicobacter *2003 Jun;8(3):207-15; O'Mahony R, Al-Khtheeri H, Weerasekera D, Fernando N,Vaira D, Holton J, Basset C, "Bactericidal and anti-adhesive properties of culinary and medicinal plants against Helicobacter pylori,"* World Journal of Gastroenterology *2005 Dec 21;11(47):7499-507; Lacobellis N, Lo Cantore P, Capasso F, Senatore F, "Antibacterial activity of Cuminum cyminum L. and Carum carvi L. essential oils,"* Journal of Agricultural and Food Chemistry*, 2005 Jan 12;53(1):57-61; Imai H, Osawa K, Yasuda H, Hamashima H, Arai T, Sasatsu M, "Inhibition by the essential oils of peppermint and spearmint of the growth of pathogenic bacteria,"* Microbio *2001;106 Suppl 1:31-9; Bae E, Han M, Kim N, Kim D, "Anti-Helicobacter pylori activity of herbal medicines,"* Biological and Pharmaceutical Bulletin*, 21(9): 990-992. 1998.*

Ulcerative Colitis

Ulcerative colitis (UC) is a disease in which the lining of the large intestine becomes inflamed. This inflammation leads to the formation of raw sores or ulcers causing pain and bloody diarrhea. UC can begin at any age but most people who get it are in their early twenties. For most, UC comes and goes for the rest of their lives. Most people can control attacks by taking medicine and adjusting their diet. This consists of decreasing refined foods, sugars, and saturated fats and eliminating all food allergens from the diet. Common allergenic foods are dairy, soy, citrus, peanuts, wheat, fish, eggs, corn, and tomatoes. A rotation diet in which the same food is not eaten more than once every four days may help reduce symptoms. Dairy products, Brassica vegetables (cabbage, Brussels sprouts, broccoli, cauliflower and kale), and gluten-containing grains (wheat, oats, barley, triticale and rye) may make ulcerative colitis worse. Fiber supplementation can help reduce abdominal pain cramping and gas: psyllium flax meal, slippery elm powder, and marshmallow root powder can soothe irritated mucous membranes. Probiotic supplements should be taken two to three times a day. Essential fatty acids may also protect intestinal lining. Fish oil (3 to 4 g up to 18 g per day) and proteolytic enzymes like Bromelain (250 to 500 mg between meals) can also help with inflammation.

Peppermint oil in capsules is the most-researched solution to this problem, although other essential oils including thyme and caraway have been used for treatment.

Hills J, Aaronson P, "The mechanism of action of peppermint oil on gastrointestinal smooth muscle; An analysis using patch clamp electrophysiology and isolated tissue pharmacology in rabbit and guinea pig," Gastroenterology *1991;101:55-65; Pittler M, "Peppermint Oil for Irritable Bowel Syndrome: A Critical Review and Meta-analysis,"* American Journal of Gastroenterology*, Jul1998;93(7):1131-1135; Liu J, et al., "Enteric-coated Peppermint-oil Capsules in the Treatment of Irritable Bowel Syndrome: A Prospective, Randomized Trial,"* Journal of Gastroenterology*, Dec1997;32(6):765-768; P. C. Braga, M. Dal Sasso, M. Culici, T. Bianchi, L. Bordoni, and L. Marabini, "Anti-inflammatory activity of thymol: inhibitory effect on the release of human neutrophil elastase,"* Pharmacology*, Vol. 77, No. 3, pp. 130-136, 2006; Adam B, Liebregts T, Best J, et al., "A combination of peppermint oil and caraway oil attenuates the post-inflammatory visceral hyperalgesia in a rat model,"* Scandinavian Journal of Gastroenterology*, Vol. 41, No. 2, pp. 155-160, 2006.*

Anxiety

The role of psychological and emotional stress in digestive disorders is too conspicuous to ignore. Lavender, an herb beloved for its pleasing fragrance, has also proved to be an effective remedy for both anxiety and depression. Taken orally, lavender extract can be as effective as low-dose benzodiazepines for attenuating anxiety. Subjects in the lavender group took 80 mg per

Anxiety

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Woelk H, Schlafke S, "A multi-center, double-blind, randomised study of the Lavender oil preparation Silexan in comparison to Lorazepam for generalized anxiety disorder," Phytomedicine *(2010); 17:2: 94-99.*

Gall Stones and Peppermint Oil

Dissolving gall stones with essential oils could offer a safe alternative to surgery. There is substantial evidence that essential oils can be used to dissolve gallstones, especially oils rich in terpenes. All essential oils have some terpene content and terpenes such as d-limonene have tested properties. Peppermint oil has also been used for softening gall-stone formations.

Research indicates that peppermint exhibits antibacterial activity against *Salmonella enteritidis*, *Escherichia coli*, *Staphylococcus aureus*, and *Helicobacter pylori*. Peppermint has also been found to kill the amoeba Giardia. Use of peppermint oil may increase levels of the drug cyclosporine in the body thus enhancing conventional treatment of certain microbes.

Bell GD, Doran J., "Gall stone dissolution in man using an essential oil preparation," British Medical Journal. 1979 Jan 6;1(6155):24–24; Ellis WR, Bell GD, "Treatment of biliary duct stones with a terpene preparation," British Medical Journal (Clinical Research Edition) *1981. 282(6264):611. doi: 10.1136/bmj.282.6264.611; Hordinsky BZ, "Terpenes in the treatment of gallstones,"* Minnesota Medicine *1971 54(8):649-652; Igimi H, Hisatsugu T, Nishimura M, "The use of d-limonene preparation as a dissolving agent of gallstones,"* American Journal of Digestive Disorders *1976 21(11):926–939; Somerville KW, Ellis WR, Whitten BH, et al., "Stones in the common bile duct: experience with medical dissolution therapy,"* Postgraduate Medical Journal *1985;61:313-6; Imai H, Osawa K, Yasuda H, Hamashima H, Arai T, Sasatsu M, "Inhibition by the essential oils of peppermint and spearmint of the growth of pathogenic bacteria,"* Microbios *2001, 106 Suppl 1:31-9; Vidal F, Vidal J, Gadelha A, Lopes C, Coelho M, Monteiro Leal L, "Giardia lamblia: The effects of extracts and fractions from Mentha piperita Lin. (Lamiaceae) on trophozoites,"* Experimental Parasitology *2007; 115(1): 25-31; Wacher V, Wong S, Wong H, "Peppermint oil enhances cyclosporine oral bioavailability in rats: comparison with D-alpha-tocopheryl poly(ethylene glycol 1000) succinate (TPGS) and ketoconazole,"* Journal of Pharmaceutical Science *2002;91:77-90.*

HEALTH BITS & PIECES (HFN 33:3)

Written By Dan Kenner

Sugar

For decades we have been warned of the dangers of fat and cholesterol as a cause of cardiovascular disease. But the real enemy of heart and arterial health is not fat but sugar. In fact, sugar is very likely the *worst* enemy of cardiovascular health. A comprehensive 15-year long study, including the data of 31,000 Americans, found that people who consumed 25 percent or more of their daily calories as sugar were more than *twice* as likely to die from heart disease as those who got less than 10 percent of their calories from sugar. A study published in the *Journal of the American Medical Association* (*JAMA*) concluded that "most US adults consume more added sugar than is recommended for a healthy diet," and that there's "a significant relationship between added sugar consumption and increased risk for cardiovascular disease mortality."

Dhurandhar N, Thomas D, "The Link Between Dietary Sugar Intake and Cardiovascular Disease Mortality; An Unresolved Question," Journal of the American Medical Association*, 2015; 313(9):959-960. doi:10.1001/jama.2014.18267; Yang Q, Zhang Z, Gregg EW, et al., "Added sugar intake and cardiovascular diseases mortality among US adults,"* JAMA Internal Medicine*, 2014 Apr;174(4):516-24. doi: 10.1001/jamainternmed.2013.13563.*

And Spice

We were taught in school that Columbus set out on a mission to find a new trade route to the spices of the East when he arrived in the New World. As a primary-school student, you may have wondered why that was such a big deal. But spices like black pepper, cinnamon, cloves, and nutmeg were such hot commodities 500 years ago that nations mobilized substantial resources to sail across vast oceans to find new routes to the spice-rich Orient and avoid paying Middle Eastern and North African middlemen who had become extremely wealthy by closely controlling access to them. Spices were important for flavoring food but also for such tasks as making perfume, embalming the dead, medications, and preserving meat. The essential oils in black pepper and cayenne literally turn death into life by preserving raw meat to make sausages, which were rich in probiotics like *Lactobacillus plantarum* and became richer as they "cured." Now research from the East has confirmed the value of spices for health and longevity.

A study at China Kadoorie Biobank followed 487,375 subjects, aged 30-79, from 10 geographically diverse areas across China that were enrolled between 2004 and 2008. The study found that participants who consumed spicy foods 6 or 7 days a week showed a 14% reduction in relative risk for total mortality, including deaths due to cancer, respiratory diseases, and ischemic heart diseases, compared to those who ate spicy foods less than once per week. The beneficial effect of spicy foods was stronger in non-drinkers of alcohol.

Lv J, Qi L, Yu C, Yang L, et al., "China Kadoorie Biobank Collaborative Group, Consumption of spicy foods and total and cause specific mortality: population based cohort study," British Medical Journal*, 2015 Aug 4;351:h3942. doi: 10.1136/bmj.h3942.*

And Everything Nice

Ginger is a well-known flavor in the form of ginger snaps or ginger ale and even ginger beer. The preventive effect of ginger on the nausea, dizziness, and vomiting of motion sickness and for postoperative vomiting and vomiting of pregnancy is well documented in numerous high-quality clinical studies. It is used in traditional Chinese medicine in dozens of classical formulas for gastrointestinal problems.

Black pepper stimulates the secretion of pancreatic digestive enzymes and promotes peristalsis. Blends of spices that include turmeric, red chili, black pepper, and cumin have been shown to enhance the activity of pancreatic lipase, amylase, and chymotrypsin in rats by 40%, 16%, and 77%, respectively. This combination also stimulated increased production of bile, with a higher concentration of bile acid. Ginger, piperine (from black pepper), capsaicin (from chili peppers), and curcumin (from turmeric) enhanced secretion of bile and pancreatic enzymes in rats fed a high-fat diet. They also prevented the accumulation of triglycerides in the liver. The combination also pointed toward a possible weight-loss effect by reducing the activity of enzymes, which are targets for the treatment and prevention of obesity and diabetes. It also increases the activity of an enzyme that releases fatty acids from fat cells to be used as fuel.

Langner E, Greifenberg S, Gruenwald J, "Ginger: history and use," Advances in Therapy, 1998 Jan-Feb;15(1): 25-44; Srinivasan K, "Black pepper and its pungent principle-piperine: a review of diverse physiological effects," Critical Reviews in Food Science and Nutrition, *2007;47(8):735-48; Platel K, Rao A, Saraswathi G, Srinivasan K, "Digestive stimulant action of three Indian spice mixes in experimental rats,"* Nahrung, *2002 Dec;46(6):394-8.*

A Discouraging Word

Industrial toxins accumulate in our bodies and can contribute to a variety of health problems. These cumulative effects of chemicals on the human body prompted a taskforce of over 170 scientists from leading research centers in 28 countries to study the connection between these chemicals and the development of cancer. They investigated 85 chemicals not classified as carcinogens and discovered that 50 of them encouraged cancer-promoting mechanisms at levels normally encountered in day-to-day exposure. According to cancer biologist Dr. Hemad Yasaei, "This research backs up the idea that chemicals not considered harmful by themselves are combining and accumulating in our bodies to trigger cancer and might lie behind the global cancer epidemic we are witnessing." In the research study, they estimated that chemicals could be responsible for as many 20% of all cancers.

Goodson W, Lowe L, et al., "Assessing the carcinogenic potential of low-dose exposures to chemical mixtures in the environment: the challenge ahead," Carcinogenesis, *2015; 36 (Suppl 1): S254 DOI:10.1093/carcin/bgv039.*

Hormone Derange

A study published in *The Journal of Clinical Endocrinology and Metabolism* in March 2015 estimated that exposure to endocrine-disrupting chemicals (EDCs) will likely cost the European Union $209 billion a year in health care expenses and lost earning potential. Since a prior report by the Endocrine Society in 2009, which examined the scientific evidence on EDCs and the health risks associated with them, recent research has demonstrated that exposure to EDCs is also associated with an increased risk of diabetes and obesity. Exposure to EDCs is also linked to infertility, hormone-related cancers, neurological issues, and other chronic diseases. EDCs alter the way cells proliferate and develop by imitating, blocking, or otherwise interfering with the body's normal hormones. The report linked EDCs to hormone-related cancers, prostate disorders, thyroid disease, and nervous system problems.

Endocrine-disrupting chemicals include BPA (bisphenol A) (found in food can linings and cash register receipts), phthalates from plastics (PVC products, vinyl shower curtains) and cosmetics (perfumes, nail polish, lotions), flame retardants, solvents, lubricants (PCBs, PBBs, and PBDEs), pesticides (sprayed on fruits and vegetables), and some insecticides containing heavy metals like cadmium, lead, arsenic, and mercury. Damage to human health from EDCs has been confirmed in hundreds of studies.

Today, these chemicals are ubiquitous and accumulating throughout the World. Over 80,000 chemicals are introduced into the environment each year. We are exposed to all types of industrial chemicals in our food, our water, and in the air.

Gore A, Chappell V, Fenton S, Flaws J, et al., "Executive Summary to EDC-2: The Endocrine Society's Second Scientific Statement on Endocrine-Disrupting Chemicals," Endocrine Reviews*, 2015; er.2015-1093 DOI:10.1210/er.2015-1093.*

Healthcare Costs

According to a new study, certain nutritional supplements may reduce healthcare costs by preventing hospitalization for coronary heart disease (CHD). In a cost-benefit analysis of adults over 55, researchers found a reduction of costly catastrophic medical events from CHD occurring with individuals who take either omega-3 fatty acids or B vitamins daily. The amount of money spent on the treatment of CHD, as opposed to prevention, is a huge burden on individuals and on society. Hospitalization for all U.S. adults over the age of 55 with CHD cost over $64 billion in 2012. The potential of nutritional supplements with demonstrated benefits to cardiovascular health have a great potential to help decrease total healthcare expenditures.

A cost-savings model was presented in the report, "Smart Prevention - Health Care Cost Savings Resulting from the Targeted Use of Dietary Supplements." Researchers conducted a systematic review of scientific research on the relationship between risk of a CHD event and daily use of Omega-3 supplements and B vitamins. The research team applied a cost-benefit analysis on projected rates of CHD-related medical events in adults over the age of 55 with CHD across the U.S. They found that if every high-risk person took a fish-oil supplement daily, an average of $2.1 billion in healthcare expenditures per year could be avoided; and if they took B vitamins daily, an average of an additional $1.5 billion in expenditures per year would be saved.

Widespread official endorsement of the use of nutritional supplements to help reduce healthcare costs would be a desirable outcome of research like this. This would result in a much less expensive approach to treatment of CHD patients not only for patients but for employers, HMOs, and healthcare policymakers.

Shanahan C, de Lorimier R, "Science to Finance- A tool for Deriving Economic Implications from the Results of Dietary Supplement Clinical Studies," Journal of Dietary Supplements*, 08/2014;*
OI: 10.3109/19390211.2014.952866
http://www.supplementforsmartprevention.org.

Health Bits and Pieces (HFN 33:2)
Written By Dan Kenner, Ph.D.

Truth Decay

An increase in bone mass due to fluoride ingestion or treatment (for osteoporosis) does not translate into improved bone strength, and high doses of sodium fluoride for osteoporosis treatment may increase the risk of vertebral fractures. In a 2005 study, it was found that 47% of children living in a New Delhi neighborhood with average water fluoride level of 4.37 ppm have evidence of clinical hypothyroidism attributable to fluoride. They found borderline low FT3 levels among all children exposed to fluoridated water. Researchers from the Harvard School of Public Health (HSPH) and China Medical University in Shenyang for the first time combined 27 studies and found strong indications that fluoride may adversely affect cognitive development in children. Based upon the findings, the authors say that this risk should not be ignored, and that more research on fluoride's impact on the developing brain is warranted. A new study reveals that States with a higher portion of artificially fluoridated water had a higher prevalence of ADHD. This relationship held up across six different years examined. The authors, psychologists Christine Till and Ashley Malin at Toronto's York University, looked at the prevalence of fluoridation by State in 1992 and rates of ADHD diagnoses in subsequent years.

Riggs B, Hodgson S, O'Fallon M, et al., "Effect of fluoride treatment on the fracture rate in postmenopausal women with osteoporosis," The New England Journal of Medicine *322:12, pp. 802-809 (1990);*
A. K. Susheela, M. Bhatnagar, K. Vig, and N. K. Mondal, "Excess fluoride ingestion and thyroid hormone derangements in children living in Delhi, India," Fluoride*, vol. 38, no. 2, pp. 98-108 (2005);*
Malin A, Till C, "Exposure to fluoridated water and attention deficit hyperactivity disorder prevalence among children and adolescents in the United States: an ecological association,"
Environmental Health *2015, 14:17 doi:10.1186/s12940-015-0003-1; Choi A, Sun G, Zhang Y, Grandjean P, "Developmental Fluoride Neurotoxicity: A Systematic Review and Meta-Analysis,"* Environmental Health Perspectives*; DOI:10.1289/ehp.1104912.*

Probiotics and Depression

In a study published just last week in *Brain, Behavior and Immunity,* researchers found that multispecies probiotics have an effect on mood after four weeks of supplementation. Hippocrates stated, "All disease begins in the gut," and there is more and more evidence and research to support this. There is definitely a gut-brain relationship between nutrition and the gut microbiome, and how they support brain health and function.

Probiotics are essential in improving digestion and immune function. In this study, researchers investigated whether the administration of a multispecies probiotic (containing *Bifidobacterium bifidum, Bifidobacterium lactis*, *Lactobacillus acidophilus*, *Lactobacillus brevis*, *Lactobacillus casei*, *Lactobacillus salivarius*, and *Lactococcus lactis*) had an effect on rumination (i.e., recurrent thoughts about possible causes and consequences of a person's distress). "Rumination is one of the most predictive vulnerability markers of depression," says psychologist and study author Laura Steenbergen. "Persistent ruminative thoughts often precede and predict episodes of depression."

This study was blind at three levels – group allocator, participants, and outcome assessor. It investigated the effect of multispecies probiotic intervention on cognitive reactivity to sad mood, as well as reported symptoms of depression and anxiety. It was placebo-controlled, randomized, and had a pre- and post-intervention assessment design. Among the 40 participants, 20 people received a placebo and the others received a probiotic mixture. Participants came to the lab twice: once at the beginning of the study and again four weeks later. Both times they filled out a questionnaire for measuring depression. The participants who received the probiotics showed significantly reduced "ruminative thoughts" compared to the placebo group. These results provide the first clinical evidence that probiotics may help reduce negative thoughts. It may also illuminate a cognitive mechanism that may be responsible for the positive mood effects of probiotic supplementation.

Steenbergen L, Sellaro R, van Hemert S, Bosch J, Colzato L, "A randomized controlled trial to test the effect of multispecies probiotics on cognitive reactivity to sad mood," Brain, Behavior, and Immunity, *2015; DOI: 10.1016/j.bbi.2015.04.003.*

The War on Non-Drugs

New York Attorney General Eric Schneiderman is once again attacking the supplement industry. Recently, he sent a letter co-signed with 13 other Attorneys General requesting Congress to "launch a comprehensive congressional inquiry in the herbal supplement industry" because "a current state investigation has raised serious concerns about the marketing and safety of the herbal supplements regularly consumed by millions of Americans." As many of you know, the testing method Schneiderman used was questionable at best. The DNA testing had no apparent verification by other test methods and did not employ a second or third analytical laboratory to confirm the findings of the first lab results. In addition, many of the products tested were extracts that would not be expected to contain DNA from parent materials. Also not taken into consideration is the fact that DNA can also be damaged by heat during the manufacturing process.

The letter advises certain congressional subcommittees, along with the FDA, to conduct an investigation that would consider tightening supplement regulations that would include new rules regarding ingredients, labeling guidelines, and manufacturing practices. These regulations are supposedly meant to enhance quality assurance in an industry that already is highly regulated and has an excellent record for quality. The only remaining regulation is to subject supplements to the multibillion-dollar FDA drug safety and efficacy approval process, which the New York Attorney General knows no one will ever pay for since natural supplements cannot be patented.

Current good manufacturing practices (cGMPs) for supplements could not be more stringent. Laws to guarantee safe products already exist and it is up to the FDA to enforce those laws. The testing regimens that the supplement industry are held to under cGMPs are one reason that supplements have such a proven track record of safety. One report found that there were an average of 1,575 adverse event reports (AERs) related to supplements per year between 2008 and 2011. When you consider about 50% of Americans take supplements every day, this means that only 1/100th of 1% of all supplement users ever experience any problems at all. In addition, AERs are not concrete evidence of supplements being a factor in an adverse event, but simply a possible correlation. On the other hand, in 2008 there were 526,527 AERs from pharmaceuticals, which is *488 times* more than the number of supplement AERs.

Statins Promote Atherosclerosis and Heart Failure

This new study validates the theory that statins may be causative in coronary-artery calcification and can be toxic to the mitochondria, impairing muscle function in the heart and blood vessels through the depletion of CoQ10 and 'heme A' and, consequently, ATP generation. The study demonstrated that statins inhibit the synthesis of Vitamin K_2, which is an important cofactor for matrix Gla-protein activation. This vitamin is responsible for the protection of the arteries from calcification. In addition, statins inhibit the biosynthesis of selenium-containing proteins, such as glutathione peroxidase, that suppress peroxidative stress. An impairment of selenoprotein biosynthesis may be a contributing factor in congestive heart failure similar to cardiomyopathies seen with selenium deficiency. The epidemic of heart failure and atherosclerosis, therefore, may paradoxically be aggravated by the prevalent use of statin medication. The researchers propose that the current statin treatment guidelines be seriously reevaluated. Heart disease is the leading cause of death in the United States, yet in many instances it may be prevented when individuals make healthy dietary and lifestyle choices.

Okuyama H, Langsjoen P, Hamazaki T, Ogushi Y, Hama R, Kobayashi T, Uchino H, "Statins stimulate atherosclerosis and heart failure: pharmacological mechanisms," Expert Review of Clinical Pharmacology, *2015 Feb 6:1-11.*

Red Wine Active Principle

According to new research published by the Texas A&M Health Science Center College of Medicine, the powerful polyphenol resveratrol may help prevent age-related memory decline. Resveratrol has been widely publicized for its cardiovascular health benefits. However, researchers believe it also has positive effects on the hippocampus, an area of the brain involved in memory (in particular, long-term memory), learning, mood, and spatial navigation. Since natural cognitive decline occurs after middle-age, the study's findings may have implications in helping with age-related memory loss in the elderly. Resveratrol may also be useful in helping with neurodegenerative conditions such as Alzheimer's disease.

In this study, which was published in *Scientific Reports*, researchers reported that the use of resveratrol had significant benefits in learning, memory, and mood in aged rats. "The results of the study were striking," Shetty said. "They indicated that for the control rats who did not receive resveratrol, spatial learning ability was largely maintained but ability to make new spatial memories significantly declined between 22 and 25 months. By contrast, both spatial learning and memory improved in the resveratrol-treated rats." The results demonstrated neurogenesis doubled in the rats given resveratrol compared to the control rats. The resveratrol-treated rats also had significantly improved microvasculature, indicating improved blood flow, and had a lower level of chronic inflammation in the hippocampus. This study provides evidence that the use of resveratrol in middle-aged individuals may help support improved memory and mood function as they age.

Maheedhar Kodali M, Parihar V, Hattiangady B, Mishra V, Shuai B, Shetty A, "Resveratrol Prevents Age-Related Memory and Mood Dysfunction with Increased Hippocampal Neurogenesis and Microvasculature, and Reduced Glial Activation," Scientific Reports, *2015; 5: 8075 DOI: 10.1038/srep08075.*

Health Bits and Pieces [HFN 33:1]

Written by By Dan Kenner, PhD, L.Ac.

If you question the conventional mindset on vaccination, are you “anti-science”? Senator Rand Paul stated, “I have heard of many tragic cases of walking, talking normal children who wound up with profound mental disorders after vaccines.” Could this perhaps explain the condition of some of his colleagues? Representative John Boehner said “I do believe all children ought to be vaccinated.” Some Republicans are afraid that he might make some heretical pronouncement about actually believing in science. So, vaccines work; but supplements do not? When asked about why I did not vaccinate any of my three children, I was usually asked “Is it for religious reasons?” My response has always been, “No, it’s for scientific reasons.” There is substantial scientific literature to support the proposition that vaccines are not necessarily safe and effective.

Fake Immunity

One of the major arguments against vaccine-induced immunity is that it primarily stimulates a superficial layer of the immune system called the humoral immune system, rather than the cellular immune system, which has actual resolving power in combating disease. Antibodies are produced by the humoral immune system and then routinely measured to determine “immunity.” The problem with this approach is that you can have high antibody levels and still get the disease. Antibodies do not necessarily have any resolving or preventive power with illness: People with permanent herpes infections have herpes antibodies. Infection from HIV is diagnosed by detecting HIV antibodies. Antibodies have no impact on the course of disease in either herpes or AIDS. Cellular immunity develops from having a childhood disease. Yet, to license a vaccine, it is only necessary to prove that they induce the formation of antibodies, not prove safety or efficacy.

According to the IRIS Research Center, formulating new vaccines so that they influence cellular immunity is one of the major challenges of vaccine research because antigen-specific antibody titers do not correlate with protection.

And the Centers for Disease Control and Prevention (CDC) report that,"[t]he findings of efficacy studies have not demonstrated a direct correlation between antibody responses and protection against pertussis disease." This is supported by the National Advisory Committee on Immunization, which stated, "[t]here is no known direct correlation between levels of specific pertussis antibodies and protection against pertussis."

Antibody titers indicate that there has been an immune response, but they ***do not*** indicate future immunity. Furthermore, there is evidence that antibodies are not required for immunity to viral infections.

Del Giudice G, Podda A, Rappuoli R (IRIS Research Center, Chiron SpA, Via Fiorentina 1, 53100, Siena, Italy), "What are the limits of adjuvanticity?" *Vaccine, 2001 Oct 15;20 Suppl 1:S38-41*; *Morbidity and Mortality Weekly Report (MMWR)* (March 28, 1997 / 46(RR-7);1-25) www.cdc.gov/mmwr; Advisory Committee Statement (ACS) National Advisory Committee on Immunization (NACI) statement on pertussis vaccine; Moseman E, *et al.*, "B Cell Maintenance of Subcapsular Sinus Macrophages Protects against a Fatal Viral Infection Independent of Adaptive Immunity," *Immunity* 36, 1-12, March 23, 2012.

Germ Warfare

Another reason why vaccines might be disease time bombs is because they contain retroviruses, mycoplasma, pertussis toxoid, cholera toxin, and other biological detritus along with metals like aluminum salts and mercury. Vaccines may be "seeding" humans with virus RNA. Dormant protoviruses could later be activated, resulting in multiple sclerosis or Parkinsonism. Polio vaccine was contaminated with a cancer-causing virus, called SV-40. According to polio researcher Dr. Frederick Klenner, "Many voice a silent view that the Salk and Sabin vaccine, being made from monkey kidney tissue, has been directly responsible for the major increase in leukemia in this country." At a September 10, 2003, investigative hearing of the U.S. House Subcommittee on Human Rights and Wellness chaired by Congressman Dan Burton, testimony was provided by attorney Stanley Kops that the Salk vaccine was not likely the only vaccine contaminated with SV40 and used by millions of American children. Pediatric brain cancer, once rare, rose during the past few decades according to the National Cancer Institute. But it is unknown how many of these children had or have SV40 in their brain tumors because nobody checks. There has been a Federal ban on the use of cancer cells to produce vaccines since 1954. There is now discussion about lifting that ban despite the acknowledged risks of contamination with a variety of potentially hazardous materials, including residual DNA and RNA. Some of the other ingredients in vaccines include mercury and aluminum salts, ethylene glycol, carbolic acid, acetone and other toxic chemicals. Read what the Institute of Medicine on the National Academy of Science has to say about vaccine safety and "side effects."

Stratton K, Ford A, Rusch E, Clayton E, Editors, Committee to Review Adverse Effects of Vaccines; Institute of Medicine, Institute of Medicine Report on Adverse Effects of Vaccines: Evidence and Causality: PDF is available for download from The National Academies Press at http://www.nap.edu/catalog.php?record_id=13164.

Do They Even Work?

For the risks involved, can we count on a reliable effect? According to a 1989 CDC report, “Among school-age children, [measles] outbreaks have occurred in schools with vaccination levels of greater than 98%.” The CDC also reported a measles outbreak in a documented 100% vaccinated population,” while measles vaccine failure was reported in the *Canadian Medical Association Journal*.

In turn, England saw a drop in pertussis deaths when vaccination rates dropped from 80% to 30% in the 1970s. A Swedish epidemiologist observed that “pertussis-associated mortality is currently very low in industrialized countries and no differences can be discerned when countries with high, low, and zero immunization rates were compared.” England, Wales, and West Germany had more pertussis fatalities in 1970 when the vaccination rate was high.

Vaccine failures have also been reported with meningitis and mumps vaccines. “The apparent paradox is that as measles immunization rates rise to high levels in a population, measles becomes a disease of immunized persons.”

Morbidity and Mortality Weekly Report (MMWR) *38 (8-9), Dec 29, 1989;* MMWR *33(24), June 22, 1984; Sutcliffe P, Rea E, “Outbreak of measles in a highly vaccinated school population,”* Canadian Medical Association Journal *155(10) 1407-1413; Trollfors B, Rabo E, “Whooping cough in adults,”* British Medical Journal *Sep 12, 1981, pp. 696-697; Institution Division of Bacterial Products, Center for Biologics Evaluation and Research, Food and Drug Administration, Bethesda, Md 20892, “Haemophilus b disease after vaccination with Haemophilus b polysaccharide or conjugate vaccine,”* American Journal of Diseases of Children *145(12):1379-82, 1991 Dec.; Briss P, Fehrs L, Parker R, et al., “Sustained transmission of mumps in a highly vaccinated population: assessment of primary vaccine failure and waning vaccine-induced immunity,”* Journal of Infectious Disease *169(1): 77-82, Jan 1994. doi:10.1093/infdis/169.1.77; Review article with 50 references by the Mayo Vaccine Research Group in* Archives of Internal Medicine *154(16): 1815-1920, August 22, 1994.*

Can I Catch the Measles if I Get the Autism Vaccine?

Vaccines can be the cause of disease. Investigators have found, for example, live measles virus in the cerebral spinal fluid in children who become autistic after MMR vaccinations. Antibodies to measles virus are elevated in children with autism but not in normal kids, suggesting that virus-induced autoimmunity may play a causal role. Journalist Dan Olmsted looked for children who had not been exposed to the mercury in vaccines. In scientific research, this would be called a "control group." He found his group among an Amish population in Pennsylvania, who refuse to vaccinate their infants. Olmsted calculated that there should have been 130 autistic children among the Amish in conformity with the national average. He found only four. One had been exposed to high levels of mercury from a power plant; the other three, including an adoptee, had received vaccines.

A study published in *Neurology* in 2004 implicated hepatitis B vaccine as a causative factor in multiple sclerosis. Similarly, researchers in the UK found that having pertussis vaccination made children five times more likely to become asthmatic.

Deadly Immunity, by Robert F. Kennedy, Jr. Rolling Stone, Jun 20, 2005; Hernán M, Jick S, Olek M, Jick H, "Recombinant hepatitis B vaccine and the risk of multiple sclerosis - A prospective study," *Neurology* 63: 838-842, 2004; Bradstreet J, El Dahr J, Anthony A, Kartzinel J, Wakefield A, "Detection of Measles Virus Genomic RNA in Cerebrospinal Fluid of Children with Regressive Autism: a Report of Three Cases," *Journal of American Physicians and Surgeons* Volume 9(2) Summer 2004; Odent M, Culpin E, Kimmel T, "Letter to the editor, Pertussis vaccination and asthma: Is there a link?" *Journal of the American Medical Association* 272: 592-593, 1994.

Measles – the Cure for Allergies

A total of 14,893 children were included from a cross-sectional, multicenter study conducted in five European countries. The children were between 5 and 13 years of age and represented farm children, Steiner-school children, and 2 reference groups. In the whole group of children, allergic susceptibility was inversely associated with measles infection. To reduce risks of disease-related modification of exposure, children who reported symptoms of wheezing and/or eczema debuting during first year of life were excluded from some analyses. After this exclusion, inverse associations were observed between measles infection and “any allergic symptom” and “any diagnosis of allergy by a physician.” However, no associations were found between measles vaccination and allergic disease. Prevention of allergic tendencies could not be observed with measles vaccine. Since vaccines cause an abnormal immune system response, it can create a predisposition to inappropriate responses to environmental stimuli.

Rosenlund H, Bergstrom A, Alm J, et al., “Allergic Disease and Atopic Sensitization in Children in Relation to Measles Vaccination and Measles Infection,” Pediatrics *March 2009; 123:3 771-778; doi:10.1542/peds.2008-0013.*

A Nation of Sheep: So if you’re Vaccinated, What are you Worried About?

One of the most commonly parroted sound bites in the vaccine debate is the term "Herd Immunity." The idea of herd immunity has its roots in the late 19th Century. In the 1880s, doctors noticed diphtheria lesions in the throats of children who did not actually contract the disease. This led to the creation of an explanation that people in whom the disease was “dormant” were “carriers.” So, these “disease carriers” – formerly known as healthy children – were targeted as a partial cause of the epidemic. In order to eliminate the imagined threat of exposure to people who harbor the germs, but don’t have the disease, it was considered necessary to vaccinate the entire “herd.”

The herd immunity concept is used to explain how vaccinated people can still contract the disease, since a critical mass of the population is not immune because they have not been vaccinated. The idea is that if 95% or more of the population can be “immunized” to an infectious disease via vaccination, the disease will be eradicated or controlled. Despite these claims, there is little proof that vaccines are responsible for eradicating diseases even when “herd immunity” vaccination levels are reached. Recent outbreaks of common diseases like measles are evidence of this.

According to Russell Blaylock, M.D., “In the original description of herd immunity, the protection to the population at large occurred only if people contracted the infections naturally. The reason for this is that naturally-acquired immunity lasts for a lifetime. The vaccine proponents quickly latched onto this concept and applied it to vaccine-induced immunity. But, there was one major problem – vaccine-induced immunity lasted for only a relatively short period, from 2 to 10 years at most, and then this applies only to humoral immunity. This is why they began, silently, to suggest boosters for most vaccines, even the common childhood infections such as chickenpox, measles, mumps, and rubella.” (www.russellblaylockmd.com)

Along with the growth of interest in herd immunity, there has been a proliferation of views of what it means or even whether it exists at all. There is still a fair amount of scientific debate in which some researchers have written, particularly with respect to data on measles, challenging the concept of herd immunity. Other researchers make wide-ranging estimates, from 70 to 95%, of the threshold required for herd immunity to take place for disease eradication.

An under-vaccinated public is sometimes said to be the problem with disease epidemics, but more might not be better. Vermont declared a statewide epidemic of whooping cough that started in 2012 and continued into the year 2013. There were a total of 612 confirmed cases of pertussis of which 90% were vaccinated with the TDaP vaccine. The *New England Journal of Medicine* released a study that paralleled this outbreak showing that among the confirmed cases of whooping cough the majority of them, 80%, had received multiple TDap vaccinations – with the most receiving 5 or 6 doses.

Furthermore, there is new evidence that exposure to a pathogen is not the only way a healthy immune system develops immunity to its pathogenicity. Immunity develops in ways that are still mysterious to the scientific community.

Fine P, "Herd immunity: history, theory, practice," Epidemiology Reviews *15, 265-302 (1993); Klock L, Rachelefsky G, "Failure of rubella herd immunity during an epidemic,"* New England Journal of Medicine *288, 69-72 (1973); Su L, Kidd B, Han A, Kotzin J, Davis M, "Virus-Specific* $CD4^+$ *Memory-Phenotype T Cells Are Abundant in Unexposed Adults,"* Immunity *Volume 38, Issue 2, 373-383, 07 February 2013; Klein N, M.D., Bartlett J, Rowhani-Rahbar A, Fireman B, Baxter R, "Waning Protection after Fifth Dose of Acellular Pertussis Vaccine in Children,"* New England Journal of Medicine *2012; 367:1012-1019 September 13, 2012 DOI: 10.1056/NEJMoa1200850.*

One Man's Meat …

Biological individuality plays a role just as it does in every aspect of medicine and with every substance ever used for therapeutic purposes. Look at the *Physicians' Desk Reference*, a huge tome filled with hundreds of pages on how we all react individually to all drugs, underscoring the unpredictability of "side effects." We know from epigenetic science that our genes are not our destiny. Dr. Suzanne Humphries, a physician and educator on vaccination, refers to vaccinating infant immune systems as dropping "little cluster bombs" that can eventually "explode into a big problem." She cites a study by Nikolaj Orntoft, in which African girls were injected with a tetanus vaccine to see which genes might be up-regulated or down-regulated. What they found is that there is really no way to predict which genes will be affected. (www.drsuzanne.net) So, not only will each individual have a unique response to any given vaccine, we're also epigenetically predisposed to respond differently. Cancer genes, genetic tendencies to autoimmune diseases, or genes related to any other pathological cellular disease could be activated.

Orntoft N, Thorsen K, et al., "Leukocyte transcript alterations in West-African girls following a booster vaccination with diphtheria-tetanus-pertussis vaccine," Scandinavian Journal of Clinical and Laboratory Investigation (Impact Factor: 1.38), *5/2013. DOI: 10.3109/00365513.2013.783229.*

The Cure for Measles Mortality

This year, thousands of children in Afghanistan will die from measles; they are among the quarter million of children worldwide who die annually from this disease, a tragic situation that is at least improving. We need to encourage pharmaceutical companies to inform people that mortality from measles in Third-World children can be eliminated or dramatically reduced by two simple doses of Vitamin A. Studies funded by WHO and UNESCO have shown that mortality from measles can be practically eliminated by supplementing this vitamin in two doses. This has been known since the 1930s and there is ample evidence that this nutritional supplement can save innocent lives, even in the worst of hygienic conditions.

Centers for Disease Control. Measles-United States, 1990, MMWR. 1991;40:369-372; Olson J, "Vitamin A, retinoids, and carotenoids," In: Shils M, Young V. eds. Modern Nutrition in Health and Disease*, Philadelphia, PA: Lea and Febiger; 1988:292-312; Barclay A, Foster A, Sommer A, "Vitamin A supplements and mortality related to measles: a randomized clinical trial,"* British Medical Journal

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This year, thousands of children in Afghanistan will die from measles; they are among the quarter million of children worldwide who die annually from this disease, a tragic situation that is at least improving. We need to encourage pharmaceutical companies to inform people that mortality from measles in Third-World children can be eliminated or dramatically reduced by two simple doses of Vitamin A. Studies funded by WHO and UNESCO have shown that mortality from measles can be practically eliminated by supplementing this vitamin in two doses. This has been known since the 1930s and there is ample evidence that this nutritional supplement can save innocent lives, even in the worst of hygienic conditions.

Centers for Disease Control. Measles-United States, 1990, MMWR. 1991;40:369-372; Olson J, "Vitamin A, retinoids, and carotenoids," In: Shils M, Young V. eds. Modern Nutrition in Health and Disease*, Philadelphia, PA: Lea and Febiger; 1988:292-312; Barclay A, Foster A, Sommer A, "Vitamin A supplements and mortality related to measles: a randomized clinical trial,"* British Medical Journal *1987;294: 294-2961993;91;1014; Committee on Infectious Diseases, "Vitamin A Treatment of Measles,"* Pediatrics *Vol. 91 No. 5, May 1, 1993, pp. 1014 -1015, Online version at http://pediatrics.aappublications.org/content/91/5/1014; Coutsoudis A, Kiepiela P, Coovadia H, et al., "Vitamin A supplementation enhances specific IgG antibody levels and total lymphocyte numbers while improving morbidity in measles,"* Pediatric Infectious Disease *1 1992;11:203-209; Markowitz I, Nzilambi N, Driskell W, et al., "Vitamin A levels and mortality among hospitalized measles patients, Kinshasa, Zaire,"* Journal of Tropical Pediatrics *1989;35:109-112; Ellison J, "Intensive vitamin therapy in measles,"* British Medical Journal *1932;2:708-711; Hussey G, Klein M, "A randomized, controlled trial of vitamin A in children with severe measles,"* New England Journal of Medicine*; 1990;323:160-164; Coutsoudis A, Broughton M, Coovadia H, "Vitamin A supplementation reduces measles morbidity in young African children: a randomized, placebo-controlled, double-blind trial,"* American Journal of Clinical Nutrition *1991; 54:890-895.*

Health Bits & Pieces Winter 2015 (HFN 33:4)
Written by Dan Kenner

Toxic Shock

Every day millions of women are exposing themselves to a dangerous carcinogen found in feminine hygiene products. According to a study at a university in Argentina, 85% of tampons, cotton and other hygiene products contain traces of glyphosate, the World's most widely used weed killer, also known as Roundup®. It is already established that traces of glyphosate can be found in food products. Some countries restrict its use to protect public health and the environment; but most countries, including the U.S., permit it. There is evidence that glyphosate exposure is a potential cause of human breast cancer in quantities so miniscule they are measured in parts per trillion.

Guyton K, Loomis D, Grosse Y, et al., "Carcinogenicity of tetrachlorvinphos, parathion, malathion, diazinon, and glyphosate," The Lancet, *Volume 16, No. 5, p490–491, May 2015; Thiantanawat A, Rangkadilok N, Suriyo T, Satayavivad J, Thongprakaisang S, "Glyphosate induces human breast cancer cells growth via estrogen receptors,"* Food and Chemical Toxicology, *2013 Sep;59:129-36. doi: 10.1016/j.fct.2013.05.057. Epub 2013 Jun 10.*

The Chemical Feast

Exposure to toxic chemicals is almost unavoidable in today's world. Most exposures are small enough that we don't immediately notice ill effects. On the other hand, the cumulative effects of chemicals are coming into focus as an area of increasing concern. We are exposed to pesticides, herbicides, chemical solvents, and industrial chemicals of all kinds through the food we eat, the water we drink, and the air we breathe. More than 80,000 chemicals are introduced into the World each year. It is possible that our indoor environment is as toxic as our outdoor environment and perhaps even more so. Despite the rising incidence of many types of cancer, very little research has been conducted into the potential impact of these environmental newcomers or the thousands of mostly unresearched chemical agents to which we have already been exposed.

In response to this a taskforce of over 170 scientists from leading research centers in 28 countries set out to study the link between the development of cancer and 85 chemicals that people are frequently exposed to but that are not considered carcinogenic. They found that 50 of them promoted key pathological mechanisms that are considered cancer-related at exposure levels commonly found in the environment. According to cancer biologist Dr. Hemad Yasaei, "This research backs up the idea that chemicals not considered harmful by themselves are combining and accumulating in our bodies to trigger cancer and might lie behind the global cancer epidemic we are witnessing." The researchers have estimated that chemicals could be responsible for as many as 20% of all cancers. The cumulative effects of chemicals need to be researched more thoroughly because all humans are exposed to toxic chemicals on a daily basis. The impact of reducing cancer incidence through lessened exposure could be significant.

Goodson W, Lowe L, et al., "Assessing the carcinogenic potential of low-dose exposures to chemical mixtures in the environment: the challenge ahead," Carcinogenesis, *2015; 36 (Suppl 1): S254 DOI:10.1093/carcin/bgv039.*

Antibiotics and Gut Flora

The overuse of antibiotics has been a matter of concern for many years now. Many doctors routinely overprescribe antibiotics, which has contributed to the proliferation of antibiotic-resistant bacteria. Antibiotic-resistant bacteria cause at least two million cases of disease and over 20,000 fatalities every year. Nonessential use of antibiotics, such as for treatment of viral infections and antibiotic prophylaxis to prevent infection after surgery, is the subject of debate since it enhances the spread of antibiotic resistance and may actually contribute to development of future infections. Recent research on the effects of antibiotics on microbial diversity in the gut flora have disturbing implications with respect to the role antibiotic treatment might play in the development of chronic disease.

Microbial diversity was adversely affected for months following the use of various antibiotics in healthy adults. Researchers measured microbial diversity, quantity of butyrate-producing bacteria, and antibiotic-resistant genes. The researchers noticed a decrease in butyrate-producing bacteria. Butyrate plays an important role in colon health and the bacteria that produce it are considered to be among the friendliest. Clindamycin significantly reduced gut flora for up to 4 months and ciprofloxacin up to 12 months. Amoxicillin did not affect microbiome diversity but had the greatest effect on antibiotic-resistant genes. The salivary microbiome recovered quickly from antibiotic exposure but the fecal microbiome showed long-lasting changes with butyrate-producing bacterial species severely underrepresented and an increase of genes associated with antibiotic resistance.

Zaura E, Brandt B, Mattos M, et al., "Same exposure but two radically different responses to antibiotics: Resilience of the salivary microbiome versus long term microbial shifts in feces," mBio *6:6 ; Published 10 November 2015, doi:10.1128/mBio.01693-15.*

Baby Guts

Antibiotics account for about 25% of all medications prescribed to children. One-third of these prescriptions are considered unnecessary. Recent research has shown that antibiotic use in infants causes changes in gut bacteria that lead to disease later in life including resistance to infection, allergies, autoimmune disease, and even obesity. This could be a partial explanation for the sharp rise in allergies and autoimmune disease in recent years. One study showed that changes in the gut microbiota can be connected with autoimmunity. This large study carried out by researchers at MIT, Harvard, and Massachusetts General Hospital identified a correlation between changes in gut microbiota and the onset of Type-1 diabetes. The study followed which changes in the microbiome would shift the balance toward Type-1 diabetes in children at high risk of developing the disease.

Antibiotic use may wipe out key gut bacteria that support the maturity of immune cells. Changes in the intestinal bacteria of infants can predict future development of food allergies or asthma. Researchers found that infants with a lower diversity of gut bacteria at three months of age are more likely to develop sensitivities to foods like milk, eggs, or peanuts by the age of 12 months. Researchers stated that patterns of gut bacteria during infancy could possibly serve as a biomarker of future disease. Antibiotics can affect the balance of the two predominant bacterial groups in the gut, which can significantly affect the accumulation of fat stores in the body. Past research has shown a relationship between the balance of these two groups, the Bacteriodetes and the Firmicutes, and obesity. A decrease in Bacteriodetes relative to Firmicutes in the gut has been associated with significant accumulation of body fat.

Vangay P, Ward T, Gerber J, Knights D, "Antibiotics, Pediatric Dysbiosis, and Disease," Cell Host & Microbe*, Volume 17, Issue 5, p553–564, 13 May 2015; Kostic A, Gevers D, Siljander H, et al., "The Dynamics of the Human Infant Gut Microbiome in Development and in Progression toward Type 1 Diabetes,"* Cell Host & Microbe*, 11 February 2015; Volume 17, Issue 2, p260–273, DOI: http://dx.doi.org/10.1016/j.chom.2015.01.001; Azad M, Konya T, Guttman D, et al., "Infant gut microbiota and food sensitization: associations in the first year of life,"* Clinical & Experimental Allergy*, March 2015; Volume 45, Issue 3 p632–643 DOI: 10.1111/cea.12487.*

Sleep that Knits up the Ravel'd Protein ...

Researchers at University of California, Berkeley found evidence that a deficiency of deep sleep is associated with a buildup of the beta-amyloid protein. Beta-amyloid protein accumulating in brain tissue is implicated in the development of Alzheimer's disease. This toxic protein appears to attack the brain's ability to retain long-term memory. This finding indicates a relationship among sleep, memory, and the incidence of Alzheimer's disease.

Accumulation of beta-amyloid protein has been found in Alzheimer's patients as well as in patients with sleep disorders. Deep sleep appears to prevent beta-amyloid proteins from accumulating and destroying brain cells. A study found that brain cells shrink during deep sleep, which allows more efficient irrigation of the brain cells by the cerebrospinal fluid and consequently enhanced removal and drainage of toxic materials that could potentially accumulate. One of the mysteries of why we need sleep may be that the body needs to detoxify the brain.

Past research has shown a positive correlation between lack of memory and the build-up of beta-amyloid protein. This research opens a new avenue toward prevention and treatment of Alzheimer's since there are numerous therapeutic approaches to sleep disorders. There are many natural approaches including the use of supplements and herbal medications, avoiding caffeine, and even use of electronic devices late at night.

Walker M, et al., "β-amyloid disrupts human NREM slow waves and related hippocampus-dependent memory consolidation," Nature Neuroscience*, June 2015 DOI:10.1038/nn.4035; Xie L, Kang H, Xu Q, et al., "Sleep initiated fluid flux drives metabolite clearance from the adult brain,"* Science*, October 18, 2013 Oct 18;342(6156):373-7. doi: 10.1126/science.1241224.*

Health Bits and Pieces (HFN 34:1)
Written By Dan Kenner

Allergies, Asthma, and the Gut

Changes in an infant’s intestinal microbiota may help predict the future development of food allergies or asthma. A new study from researchers at the University of Alberta and University of Manitoba, Canada delves into this topic. A study published last year in *Clinical & Experimental Allergy* shows that less diversity of gut bacteria at an early age, as early as three months, can be a risk factor in developing sensitivities to eggs, milk, or peanuts by the time they reach their first birthday. Lead author and researcher Meghan Azad said “We hope to develop new ways of preventing or treating allergies, possibly by modifying the gut microbiota." The gastrointestinal tract of infants becomes colonized immediately after birth with environmental microorganisms, mainly from the mother. There is strong evidence that suggests that the early composition of an infant’s microbiota plays an important role for the development of the immune system. There appears to be less diversity in the intestinal microbiota of infants born by caesarean delivery, particularly with a lack of *Bifidobacteria* species. The use of formula instead of breast milk is another factor. Breast milk is an early stimulator of the intestinal flora. Treatment with probiotics might be an option for the prevention of future health problems.

Azad M, Konya T, Guttman D, et al., "Infant gut microbiota and food sensitization: associations in the first year of life," Clinical & Experimental Allergy *2015; 45 (3): 632 DOI: 10.1111/cea.12487.*

Calcium, Osteoporosis, and Diet

The National Osteoporosis Foundation has explained in a recent position paper that the positive effects of high calcium intake really only apply during developmental years, from late childhood and early teen years, which is a critical growth period and a period of maximum skeletal growth. A recent evidence review found almost no evidence of benefit to adults from calcium supplements, but a significantly higher risk of heart attacks, kidney stones, and gastrointestinal problems that can sometimes be caused or aggravated by calcium deposition. The authors of the study, which appeared in the *Journal of Internal Medicine*, wrote, "calcium supplements appear to have a negative risk-benefit effect, and so should not be used routinely in the prevention or treatment of osteoporosis." Other studies show that a diet high in fruits and vegetables promotes stronger bones.

Weaver C, Gordon C, Janz K, et al., "The National Osteoporosis Foundation's position statement on peak bone mass development and lifestyle factors: a systematic review and implementation recommendations," Osteoporosis International, *2016; Feb 8. [Epub ahead of print]; Reid I, Bristow S, Bolland M, "Calcium supplements: benefits and risks,"* Journal of Internal Medicine, *2015; Oct;278(4):354-68. doi: 10.1111/joim.12394. Epub 2015 Jul 14. Review; Tucker K, Hannan M, Chen H, et al., "Potassium, magnesium, and fruit and vegetable intakes are associated with greater bone mineral density in elderly men and women,"* American Journal of Clinical Nutrition, *1999; Apr;69(4):727-36.*

Cataracts and Insomnia

Aging can cause progressive cloudiness in the crystalline lens ultimately forming cataracts and blocking shorter wavelengths. Individuals aged 70 years are estimated to have roughly 20% of the capacity for light reception to the retina compared with teenagers. Reduced light to the retina and eventually the brain can be a cause of sleep disturbance. In a study by the Nara Medical University in Japan 1,037 pensioners with cataracts, 174 of whom had had cataract surgery, were asked to wear a wristwatch-style sleep tracking device to record length and quality of sleep. The subjects who had had surgery slept significantly better and remained asleep for longer. Apparently, in removing the clouded lens, the surgery let in blue light, needed for normal triggering of sleep. Cataracts seem to prevent light from reaching the area of brain that sets the body rhythms. Studies have suggested that poor sleep is associated with increased risk of depression, dementia, cardiovascular diseases, and mortality. Cataract surgery can increase light to the brain and increase the secretion of melatonin, the pineal hormone associated with the quality of sleep. For those who want to prevent or treat cataracts nutritionally, the amino acid carnosine has been found to have a beneficial preventive and therapeutic effect.

Obayashi K , Saeki K, Miyata K, "Comparisons of Objective Sleep Quality Between Elderly Individuals With and Without Cataract Surgery: A Cross-Sectional Study of the HEIJO-KYO Cohort," Journal of Epidemiology, *2015; 25(8): 529–535. Published online 2015 Aug 5. Prepublished online 2015 Jun 6. doi: 10.2188/jea.JE20140201; Francesco Attanasio, et al., "Protective Effects of L- and D-Carnosine on alpha-Crystallin Amyloid Fibril Formation: Implications for Cataract Disease,"* Biochemistry*, 2009, 48 (27), pp 6522%u20136531 DOI: 10.1021/bi900343n.*

Oxytocin and Happiness

The hormone oxytocin is sometimes referred to as the neuropeptide of "attachment" and even the hormone of happiness. Even in animal studies oxytocin has been found to promote connection and bonding. The highest recorded levels have been measured in women who are multi-orgasmic. Its use has been suggested for treating people with social disorders caused by "disrupted attachment," such as eye-contact disorders, social discomfort, and even schizophrenia and autism. It is also being investigated as an anti-aging treatment to protect muscle mass, breast tissue, and increase vaginal lubrication. Oxytocin might also be associated with stimulating the happiness epicenter in the brain.

Cho M, Courtney D, Williams J, Carter C, "The effects of oxytocin and vasopressin on partner preferences in males and female prairie voles (Microtus ochrogaster)," Behavioral Neuroscience*, 1999; 113: 1071-1079; Carmichael M, Warburton V, Dixen J, Davidson J, "Relationships among cardiovascular, muscular and oxytocin responses during human sexual activity," Archives of Sexual Behavior , 1994; 23(1): 59-79; Sato W, Kochiyama T, Uono S, et al., "The structural neural substrate of subjective happiness,"* Science Report*, 2015; 5: 16891; Vaccari C, Lolait S, Ostrowski N, "Comparative distribution of vasopressin V1b and oxytocin receptor messenger ribonucleic acids in brain,"* Endocrinology*, 1998; 139(12): 5015-5033.*

Artificial Sweeteners and Diabetes

Researchers in Israel have studied how artificial sweeteners change the human microbiome, the diverse collection of microbial colonies that populate, among many other areas, your gut. Recent research shows how gut bacteria have a wide-ranging influence, on the digestive system, metabolism, the immune system, and even mood and brain function. After only one week, mice given artificially sweetened water developed a pronounced intolerance to glucose, compared to sugar water, which caused no apparent harm. They found that artificial sweeteners had changed the animals' microbiomes to a considerable degree. Next they conducted two tests in humans and found that in 381 non-diabetic volunteers there was a connection between the use of any kind of artificial sweetener and signs of glucose intolerance. The composition of the gut bacteria of the participants who used artificial sweeteners was different from those who did not. In other experiments they confirmed that changes in the microbiome caused by artificial sweeteners were the cause of glucose intolerance. The glucose intolerance went away when the researchers used antibiotics to kill off the gut flora. Also, when they injected gut bacteria from humans who had used artificial sweeteners into the intestines of mice, the animals developed glucose intolerance.

Suez J, Korem T, Zilberman-Schapira G, Segal E, Elinav E, "Non-caloric artificial sweeteners and the microbiome: findings and challenges," Gut Microbes *2015;6(2):149-55. doi: 10.1080/19490976.2015.1017700. Epub 2015 Apr 1. Review; Suez J, Korem T, Zeevi D, Zilberman-Schapira G, et al., "Artificial sweeteners induce glucose intolerance by altering the gut microbiota,"* Nature *2014 Oct 9;514(7521):181-6. doi: 10.1038/nature13793. Epub 2014 Sep 17.*

Health Bits and Pieces (HFN 34:2)
Written by Dan C. Kenner

New Light on Cancer Treatment

Light beams are being used for tumor reduction in a very aggressive form of cancer at the University of Texas, San Antonio. Associate professor in the Department of Biology, Matthew Gdovin has developed a new method to kill cancer cells that involves injecting the chemical compound nitrobenzaldehyde into a tumor, then aiming a beam of light at the tissue, which caused the cells to become very acidic inside and induce apoptosis, or cell death. According to Gdovin, "Even though there are many different types of cancers, the one thing they have in common is their susceptibility to this induced cell suicide." Gdovin estimates that up to 95 percent of the targeted cancer cells are dead after only two hours.

He then decided to try the method on triple-negative breast cancer, which is a very rapid-developing type of cancer and one of the most difficult to treat. The mortality rate for triple-negative breast cancer is very high. Only one treatment was required to stop the tumor from growing in mice. Gdovin explains that "All forms of cancer attempt to make cells acidic on the outside as a way to attract the attention of a blood vessel, which attempts to get rid of the acid, Instead, the cancer latches onto the blood vessel and uses it to make the tumor larger and larger." This method could be especially useful for drug-resistant tumors as well as tumors that are difficult to access such as those in the spine or brainstem and also for patients who do not respond well to radiation.

Kadri N, Gdovin M, Alyassin N, et al., "Photodynamic acidification therapy to reduce triple negative breast cancer growth in vivo," Journal of Clinical Oncology*, 2016 ASCO Annual Meeting (June 3-7, 2016), Vol 34, No 15 suppl (May 20 Supplement), 2016: e12574.*

EMFs and Cancer

The long-term health effects of EMF exposure have been a cause of concern for health care authorities and providers for years. Most of the industries responsible for generating EMFs into the environment are dismissive of any potential dangers. There are no long-term studies because this new electromagnetic environmental condition is relatively recent. A meta-analysis by the World Health Organization stated that "radiofrequency electromagnetic fields as possibly carcinogenic to humans." In other words, a causal association between EMFs and cancer is credible. A recently published case-control study in the *International Journal of Oncology* confirmed "an association between mobile and cordless phone use and malignant brain tumors" that supports "the hypothesis that RF-EMFs play a role both in the initiation and promotion stages of carcinogenesis."

There is evidence that children, infants, and fetuses may be more sensitive to the effects of exposure. The journal *Pediatric Endocrinology Reviews* reported that a "growing number of studies reveal the impacts on metabolism and endocrine function … reproductive system and growth … thyroid functions, adrenal hormones, glucose homeostasis and melatonin levels." They maintain that "there are unignorable amounts of studies indicating the increased risk of cancer, hematologic effects and cognitive impairment" from RF-EMF and ELF-EMF exposure.

Hardell L, Carlberg M, Söderqvist F, Mild K, "Case-control study of the association between malignant brain tumours diagnosed between 2007 and 2009 and mobile and cordless phone use," International Journal of Oncology *2013; Dec; 43(6): 1833–1845. Published online 2013 Sep 24. doi: 10.3892/ijo.2013.2111; PMCID: PMC3834325; Sangün Ö, Dündar B, Çömlekçi S, Büyükgebiz A, "The Effects of Electromagnetic Field on the Endocrine System in Children and Adolescents,"* Pediatric Endocrinology Reviews *2015; Dec;13(2):531-45.*

Sugar and Neuroinflammation

A research study has shown that rats that consumed large quantities of liquid solutions containing sugar or high-fructose corn syrup (HFCS) in doses comparable to popular sugar-sweetened soft drinks suffered memory problems and brain inflammation. Scott Kanoski, an assistant professor at the University of Southern California Dornsife College of Letters, Arts and Sciences, and colleagues investigated the effects of sugar and HFCS on 76 rats for 30 days. Three groups were divided to receive food and either an 11% sucrose solution, an 11% HFCS solution, or extra water (control group). The rats were then tested for learning and memory in a maze. The results showed learning impairment in the sucrose and HFCS groups, impaired glucose tolerance and revealed signs of neuroinflammation. There was no similar impact on adult mice, suggesting that adolescence is a time period of significant sensitivity to a diet high in sugars. According to Kanoski, "The brain is especially vulnerable to dietary influences during critical periods of development, like adolescence. Consuming a diet high in added sugars not only can lead to weight gain and metabolic disturbances, but can also negatively impact our neural functioning and cognitive ability."

Hsu TM, Konanur VR, Taing L, Usui R, Kayser BD, Goran MI, Kanoski SE, "Effects of sucrose and high fructose corn syrup consumption on spatial memory function and hippocampal neuroinflammation in adolescent rats," Hippocampus *2014, Sep 20.[Epub ahead of print].*

Amino Acid for Parkinson's Disease

The amino acid N-acetyl cysteine (NAC) may have a beneficial on the development of Parkinson's disease by enhancing the function of dopaminergic neurons, which produce dopamine, a brain neurotransmitter that is severely deficient in Parkinson's patients. This could lead to a new approach to treatment for this debilitating neurological disorder. The main feature of Parkinson's disease is the progressive destruction of cells in the substantia nigra region of the brain that produce dopamine. The main early symptoms are muscle rigidity and tremors. Brain imaging studies revealed that patients receiving NAC showed improved mental and physical abilities. In the study, Parkinson's patients were divided into two groups. One group received a combination of oral and intravenous (IV) NAC for three months (50mg/kg NAC intravenously once per week and 600mg of oral NAC twice daily on the non-IV days) while the control group received only the typical Parkinson's treatment. The patients receiving NAC had improvements of 4-9% in dopamine transporter binding according to brain scans as well as a 13% increase their Unified Parkinson's Disease Rating Scale (UPDRS) score.

Monti D, Zabrecky G, Kremens D, et al., "N-Acetyl Cysteine May Support Dopamine Neurons in Parkinson's Disease: Preliminary Clinical and Cell Line Data," PLOS ONE, *2016; 11 (6): e0157602; DOI: 10.1371/journal.pone.0157602.*

The Brain-Gut Connection

Numerous recent studies have shown a connection between gut flora, the microbiome (the system of 100 trillion microorganisms in the intestines), and brain function and behavior.

Amino Acid for Parkinson’s Disease

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DOI: 10.1371/journal.pone.0157602.

The Brain-Gut Connection

Numerous recent studies have shown a connection between gut flora, the microbiome (the system of 100 trillion microorganisms in the intestines), and brain function and behavior. Foods affect the composition of the microbiome, indicating how diet changes can result in changes in cognition and behavior. Kathy Magnusson, from Oregon State University, and her colleagues fed laboratory mice different diets and then subjected them to several tests. The team observed that “[a] high glycemic diet caused a significant decrease in the level of “cognitive flexibility,” which is the ability to adapt to change. There was also an observed reduction in long-term and short-term memory. These effects were also observed to a lesser degree with the high-fat diet. The proportions of two types of bacteria were implicated in these changes. The researchers noted, “Higher percentages of Clostridiales and lower expression of Bacteroidales in high-energy diets were related to the poorer cognitive flexibility in the reversal trials.” The research team further stated that, “These results suggest that changes in the microbiome may contribute to cognitive changes associated with eating a Western diet.”

Magnusson K, Hauck L, Jeffrey B, et al., “Relationships between diet-related changes in the gut microbiome and cognitive flexibility,” Neuroscience *2015; Volume 300, pp. 128-140.*

Health Bits & Pieces (HFN 34:3)
Written By Dan C. Kenner

Hormone Derange

Most doctors of natural medicine would not consider using a form of thyroid that is *not* derived from a natural source. Now more conventional doctors are discovering that it is being overused. Levothyroxine, synthetic thyroid hormone, has become the most prescribed drug in the U.S. for hypothyroidism. Hypothyroidism is also known as underactive thyroid disease. Researchers have questioned the need for such a large number of prescriptions without proper evidence of thyroid deficiency and an appropriate period of surveillance. Elevated TSH levels, sometimes regarded as an unreliable indicator of thyroid function, normalize without intervention in around 60% of cases, possibly because of normal fluctuations in TSH levels and numerous other factors. Whether or not patients are being properly diagnosed for hypothyroidism remains in doubt but a reduction in prescriptions of levothyroxine could be a benefit to public health because taking synthetic thyroid hormone is not without risk with such potential consequences as heart rhythm problems, chest pain, and bone loss.

Rodriguez-Gutierrez R, Spyridoula M, Ospina N, Montori V, Brito J, "Levothyroxine overuse: time for an about-face?," The Lancet Diabetes & Endocrinology, *Published Online: DOI: http://dx.doi.org/10.1016/S2213-8587(16)30276-5; Brown T, "100 best-selling, most prescribed branded drugs through March,"* Medscape.com, *2015, accessed at http://www.medscape.com/viewarticle/844317; O'Reilly D, Gray H, McKillop J, Thomson J, "Are biochemical tests of thyroid function of any value in monitoring patients receiving thyroxine replacement?,"* British Medical Journal (Clin Res Ed), *1986 September 27; 293(6550): 808-810, accessed at http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1341585/.*

Take a "Proper Gander" at this Statin Study

Pharmaceutical-industry propaganda has been promoting statin use to lower cholesterol for many years now. Some of the claims for its safety and efficacy in preventing cardiovascular disease have been challenged by research that rebuts the necessity of lowering cholesterol and the advisability of interfering with the natural and necessary process of cholesterol synthesis in the body. In a recent study published in the *Journal of the American Medical Association*, the U.S. Preventive Services Task Force (USPSTF) recommended the use of statins for primary prevention of cardiovascular disease. They said that adults ages 40 to 75 years without a history of cardiovascular disease (CVD) who have one or more CVD risk factors (high cholesterol, high blood pressure, diabetes) should take a low- to moderate-dose statin drug. The Task Force concluded that there is minimal harm from low- to moderate-dose statin use.

Other studies, however, point out the hazards of using statins. High cholesterol as a risk factor has been a source of controversy for many years. Production of cholesterol by the liver is a vital process because cholesterol is the source material for the body's production of steroids including sex hormones and vitamin D. Statins also block the normal synthesis of Coenzyme Q-10, Vitamin K2, and selenium-bonded proteins, which are all important factors for maintaining cardiovascular health.

Bibbins-Domingo K, Grossman D, Curry S, et al., "Statin Use for the Primary Prevention of Cardiovascular Disease in Adults," Journal of the American Medical Association, *2016; 316 (19): 1997 DOI: 10.1001/jama.2016.15450; Diamond D, Ravnskov U, "How statistical deception created the appearance that* *statins are safe and effective in primary and secondary prevention of cardiovascular disease,"* Expert Review of Clinical Pharmacology, *2015 Mar;8(2):201-10. doi: 10.1586/17512433.2015.1012494; Epub 2015 Feb 12.*

Magnesium Need

Magnesium is one of the most versatile minerals in the body with a wide range of effects on almost all systems of the body. Magnesium deficiency is implicated in a wide variety of heath challenges. Atheromatous disease (hardening of the arteries) is a potential cardiovascular complication of magnesium deficiency. In adults aged 45-64, sufficient serum magnesium levels reduced death by heart attack by 40% even after a 12-year follow-up.

Magnesium deficiency has also been associated with migraine headache, and magnesium therapy has been reported to be effective in the treatment of migraine. Dietary magnesium intake and serum magnesium levels have been associated with prevention of metabolic syndrome. Magnesium is in chlorophyll and so is found in all green vegetables and is found in larger amounts in oat bran; but many nutritionists recommend taking a supplement because sugar, alcohol, and stress rob the body of magnesium.

Maier J, "Low magnesium and atherosclerosis: an evidence-based link," Molecular Aspects of Medicine, *2003;24:137-146; Chiuve S, Korngold E, Januzzi J, et al., "Plasma and dietary magnesium and risk of sudden cardiac death in women,"* American Journal of Clinical Nutrition, *2011;93(2):253-260; Sun-Edelstein C, Mauskop A, "Foods and supplements in the management of migraine headaches,* Clinical Journal of Pain, *2009;25:446-452; Resnick LM, "Cellular ions in hypertension, insulin resistance, obesity, and diabetes: a unifying theme,"* Journal of the American Society of Nephrology, *1992; 3: S78-85.*

The Asthma Vitamin

Evidence supporting the importance of Vitamin D continues to grow. Low blood levels of the vitamin have been associated with increased risk of death from cardiovascular disease, cognitive impairment in older adults, cancer (especially breast cancer), and possibly a number of different conditions, including diabetes, glucose intolerance, high blood pressure, and even multiple sclerosis.

Low-serum Vitamin-D levels have also recently been linked to an increased risk of asthma. Taking Vitamin D along with conventional asthma medication can reduce the number of severe asthma attacks. In a research review of seven trials and two studies including 1,093 patients, which were conducted over a period of 6 to 12 months, investigators found that Vitamin-D supplementation reduced the risk of severe asthma attacks requiring hospital admission as well as reduced the need for steroid tablets. In a previous study published in the journal *Allergy* it was noted that Vitamin D could help manage asthma attacks. The researchers reviewed approximately four million medical records of members of Clalit Health Services, Israel's largest healthcare provider.

Martineau A, Cates C, Urashima M, et al., "Vitamin D for the management of asthma," Cochrane Library, *2016 DOI:10.1002/14651858.CD011511.pub2; Confino-Cohen R, Brufman I, Goldberg A, Feldman B, "Vitamin D, asthma prevalence and asthma exacerbations: a large adult population-based study,"* Allergy, *Vol 69, Iss 12: 1673-1680, December 2014.*

Caffeine, Theanine or Me?

Both coffee and tea contain caffeine, but tea contains another compound that appears to have a calming effect. Caffeine is a well-known stimulant but a substance in tea called L-

The Asthma Vitamin

Evidence supporting the importance of Vitamin D continues to grow. Low blood levels of the vitamin have been associated with increased risk of death from cardiovascular disease, cognitive impairment in older adults, cancer (especially breast cancer), and possibly a number of different conditions, including diabetes, glucose intolerance, high blood pressure, and even multiple sclerosis.

Low-serum Vitamin-D levels have also recently been linked to an increased risk of asthma. Taking Vitamin D along with conventional asthma medication can reduce the number of severe asthma attacks. In a research review of seven trials and two studies including 1,093 patients, which were conducted over a period of 6 to 12 months, investigators found that Vitamin-D supplementation reduced the risk of severe asthma attacks requiring hospital admission as well as reduced the need for steroid tablets. In a previous study published in the journal *Allergy* it was noted that Vitamin D could help manage asthma attacks. The researchers reviewed approximately four million medical records of members of Clalit Health Services, Israel's largest healthcare provider.

Martineau A, Cates C, Urashima M, et al., "Vitamin D for the management of asthma," Cochrane Library, *2016 DOI:10.1002/14651858.CD011511.pub2; Confino-Cohen R, Brufman I, Goldberg A, Feldman B, "Vitamin D, asthma prevalence and asthma exacerbations: a large adult population-based study,"* Allergy, *Vol 69, Iss 12: 1673-1680, December 2014.*

Caffeine, Theanine or Me?

Both coffee and tea contain caffeine, but tea contains another compound that appears to have a calming effect. Caffeine is a well-known stimulant but a substance in tea called L-theanine has the opposite effect. L-theanine crosses the blood-brain barrier and may help increase levels of the brain neurotransmitters serotonin, dopamine, and GABA. It has widely recognized anti-anxiety properties. Many people are sensitive to the caffeine in coffee, but it may be that tea can stimulate alertness and activity without some of the unpleasant effects of drinking coffee, such as heart palpitations, arrhythmias, agitation, and anxiety. Theanine in tea may offset some of the effects of caffeine and support the benefits of caffeine and moderate the negative ones. Theanine has also been shown to increase alpha brain-wave activity in humans, which results in a mentally relaxed condition while maintaining alertness.

Nathan P, Lu K, Gray M, Oliver C, "The neuropharmacology of L-theanine (N-ethyl-L-glutamine): a possible neuroprotective and cognitive enhancing agent," Journal of Herb Pharmacotherapy, *2006;6(2):21-30.*

Health Bits and Pieces (HFN 34:4)
Written By Dan C. Kenner

Third Eye Blind

Abnormal sleep patterns are associated with many types of neurological disorders. These include anxiety disorder, autism, dementia, depression, and Parkinson's disease, which are directly linked to dysfunction of the pineal gland. The pineal gland secretes melatonin, the sleep hormone. The pineal gland is very sensitive to environmental poisons. Furthermore, melatonin is derived from tryptophan, whose synthesis in plants and microbes is blocked by glyphosate (Roundup). Glyphosate also disrupts gut flora, which promotes overgrowth of *Clostridium difficile*, a bacterium that causes a serious life-threatening infection. A toxic product of clostridium, p-cresol, is linked to autism in both human and mouse models; furthermore, it enhances uptake of aluminum, another environmental toxin, and allows it to pass through the intestinal barrier. A recent research paper shows how these two toxins work synergistically to induce neurological damage. The deadly combination leads to anemia-induced hypoxia (linked to autism), causing damage to the nerves and the pineal gland. Both glyphosate and aluminum also disrupt cytochrome P450 enzymes, which are involved in melatonin metabolism.

Persico A, Napolioni V, "Urinary p-cresol in autism spectrum disorder," Neurotoxicology and Teratology*, Mar-Apr 36:82-90. doi: 10.1016/j.ntt.2012.09.002. Epub 2012 Sep 10 (2013); Seneff S, Swanson N, Li C, "Aluminum and Glyphosate Can Synergistically Induce Pineal Gland Pathology: Connection to Gut Dysbiosis and Neurological Disease,"* Agricultural Sciences*, 6, 42-70 (2015). doi: 10.4236/as.2015.61005.*

Balm of hurt minds, great nature's second course (*Macbeth*: Act 2, Scene 2)

Sleep researchers have found that sleep helps restore the brain by flushing out toxins that build up during the day. This discovery may finally explain the physiological role that sleep plays in mental and physical health. A research team at the University of Rochester Medical Center discovered a physiological mechanism that drains waste products from the brain.

During sleep, brain tissues contract allowing a greater flow of cerebrospinal fluid (CSF), the clear liquid surrounding the brain and spinal cord. CSF moves through the brain along a series of channels that surround blood vessels. The system removes a toxic protein called beta-amyloid from brain tissue. Beta-amyloid is renowned for accumulating in the brains of patients with Alzheimer's disease. Inadequate sleep could therefore result in accumulation of toxins in the central nervous system. Sleep disturbances can cause or exacerbate attention deficit as well as various categories of psychiatric disorders.

Xie L, Kang H, Xu Q, et al., "Sleep drives metabolite clearance from the adult brain," Science*, Oct 18;342 (6156):373-7. doi: 10.1126/science.1241224. PMID: 24136970 (2013); Bartholemew K, Owens J, "Sleep and ADHD: A Review,"* Medicine and Health Rhode Island *89: 91-93 (2006); Benca R, Obermeyer W, Thisted R, Gillin J, "Sleep and Psychiatric Disorders: A Meta-Analysis,"* Archives of General Psychiatry*, 49: 651-668 (1992), at http://dx.doi.org/10.1001/archpsyc.1992.01820080059010.*

Sleep Apnea and Then Some

Bronchial asthma has been linked to smoking, obesity, and air pollution; but more recently poor sleep leading to anxiety and depression has been identified as a possible cause of adults developing asthma. Linn Beate Strand, who led a team of sleep researchers at the

Norwegian University of Science and Technology explains, “Insomnia, defined as having difficulties initiating or maintaining sleep, or having poor sleep quality, is common among asthma patients, but whether insomnia patients have a higher risk of developing asthma at a later stage has not been thoroughly investigated.” The study analyzed data from 17,927 people aged 20 to 65 taking part in a long-term health study.

Brumpton B, Mai X-M, Langhammer A, et al., “Prospective study of insomnia and incident asthma in adults: the HUNT study,” European Respiratory Journal *49: 1601327 (2017), DOI: 10.1183/13993003.01327-2016.*

Obesity-Prevention Hormone

Most of the body’s supply of serotonin, a brain neurotransmitter, is actually found in the gut. Serotonin has a known relationship with appetite for food. One of the brain's neural circuits synthesizes serotonin from sensory cues; this triggers the production of a newly-discovered brain hormone, FLP-7, which activates a receptor in intestinal cells. The intestinal cells then convert fat into energy. The experimenters uncovered the gene that codes for FLP-7. This is the first time researchers have identified a brain hormone that selectively triggers fat metabolism apart from the influence of food intake.

Palamiuc L, Noble T, Witham E, et al., “A tachykinin-like neuroendocrine signalling axis couples central serotonin action and nutrient sensing with peripheral lipid metabolism,” Nature Communications *8: 14237 (2017), DOI: 10.1038/ncomms14237.*

Nutrition for Cancer

One-third of breast tumors lack estrogen receptors and are called “ER-negative.” They are aggressive cancers that resist treatment and often have a poor prognosis. About 15% of these ER-negative cancers are called “triple-negative” tumors, because they lack receptors for any of the three hormones that drive ER-positive cancers: estrogen (ER), progesterone (PR), and human epidermal growth factor (hEGF). Omega-3 fatty acids from fish and other seafood sources were found to curb growth in triple-negative tumors by 90%. Diets high in omega-6 fats from vegetable oils, however, seem to increase the risk of breast cancer.

Fox Chase Cancer Center (FCCC), “Omega-3 Fatty Acids More Effective at Inhibiting Growth of Triple-Negative Breast Cancer than of Luminal Breast Cancers,” April 9, 2013, at https://www.fccc.edu/information/news/press-releases/2013/2013-04-09-aacr-omega3-fatty-acids.html; Maillard V, Bougnoux P, Ferrari P, et al., “N-3 and N-6 fatty acids in breast adipose tissue and relative risk of breast cancer in a case-control study in Tours, France,” International Journal of Cancer, *Mar 1;98(1):78-83 (2002).*

Bite the Mushroom Before the Dust

So-called psychedelic drugs could be the most compassionate way to face death. The use of psilocybin in a controlled setting has been found to decrease anxiety and promote acceptance of impending death. Mood improved for two weeks after administration of psilocybin. Although not statistically significant, there was a definite trend toward positive outcomes in relief of anxiety and depression. Researchers proposed further investigation with a larger group of subjects and a higher dose of psilocybin for more decisive beneficial results. According to Charles Grob, M.D., “the careful and controlled use of psilocybin may provide an alternative model for the treatment of conditions that are often minimally responsive to conventional therapies, including the profound existential anxiety and despair that often accompany advanced-stage cancers.”

Grob C, Danforth A, Chopra G, et al., "Pilot Study of Psilocybin Treatment for Anxiety in Patients with Advanced-Stage Cancer," Archives of General Psychiatry, *11;68(1):71-78 (2011), doi:10.1001/archgenpsychiatry.2010.116.*

Cholesterol Curbin' Myth

For decades, high cholesterol has been considered a marker for cardiovascular risk, despite the lack of supporting data. The marketing of so-called "heart-healthy" seed oils and statin drugs has helped to cultivate the myth. In the latest edition of the 2015-2020 Dietary Guidelines for Americans, the U.S. Department of Health and Human Services dropped this bombshell: "The Key Recommendation from the *2010 Dietary Guidelines* to limit consumption of dietary cholesterol to 300 mg per day is not included in the 2015 edition. … More research is needed regarding the dose-response relationship between dietary cholesterol and blood cholesterol levels. Adequate evidence is not available for a quantitative limit for dietary cholesterol specific to the *Dietary Guidelines*."

The origin of this cholesterol curbin' myth was the Framingham Heart Study, long considered to be the gold standard of dietary lifestyle research. Although the Framingham study indicated that high cholesterol is a risk factor for heart disease, it is a very weak one. This led to the belief that consumption of cholesterol and saturated fats is a *cause* of heart disease. A quote from the study clearly refutes this: "There is a considerable range of serum cholesterol levels within the Framingham Study Group. Something explains this inter-individual variation, but it is not the diet."

U.S. Government, "2015-2020 Dietary Guidelines for Americans," Office of Disease Prevention and Health Promotion, at https://health.gov/dietaryguidelines/2015/; Kannell W, Gordon T, The Framingham diet study: diet and the regulation of serum cholesterol. The Framingham Study: An Epidemiologic Investigation of Cardiovascular Disease. *Section 24, Washington, DC, 1970; Uffe Ravnskov, M.D., Ph.D.,* The Cholesterol Myths, *NewTrends Publishing, Washington, D.C., 2000.*

Health Bits and Pieces (HFN 35:1)
Written By Dan Kenner

Ginger and Pain

In a comparison study, ginger was found to be as effective as pharmaceutical pain relievers ibuprofen (Advil) and mefenamic acid (Ponstel) for menstrual pain. Another placebo-controlled study also showed significant pain relief at onset of menses and three days prior. Ginger has also been found, among other indications, to be effective as an anticancer agent and for nausea, even for the nausea of cancer chemotherapy.

Ozgoli G, Goli M, Moattar F, "Comparison of effects of ginger, mefenamic acid, and ibuprofen on pain in women with primary dysmenorrheal," Journal of Alternative and Complementary Medicine*, 2009 Feb;15(2):129-32. doi: 10.1089/acm.2008.0311; Lee S, Cekanova M, Baek S, "Multiple mechanisms are involved in 6-gingerol-induced cell growth arrest and apoptosis in human colorectal cancer cells,"* Molecular Carcinogenesis*, 2008;47:197–208. doi: 10.1002/mc.20374; Ryan J, Heckler C, Roscoe J, et al., "Ginger (Zingiber officinale) reduces acute chemotherapy-induced nausea: a URCC CCOP study of 576 patients,"* Support Care Cancer*, 2011;20:1479–1489.*

Autism Spectrum and Leaky Gut

The Centers for Disease Control estimates that 1 in 68 children are diagnosed with autism spectrum disorder (ASD). Unfortunately there is no "one-size-fits-all" treatment for these autism-related disorders. One approach to treatment involves treatment of the "gut-brain axis." Recent research indicates how the gut-brain axis is an important component in the etiology of neurodevelopmental and neuroinflammatory disorders. A recent study is the first to look at the molecular signature of blood-brain barrier dysfunction in ASD with human patients.

Researchers analyzed postmortem cerebral cortex, cerebellum, and intestinal tissue samples from 33 individuals, including 8 with ASD, 10 with schizophrenia and 15 healthy controls. Their findings confirmed that an impaired blood-brain barrier associated with neuroinflammation contributes to ASD. Among the tissues analyzed from the ASD individuals, 75% of those had a reduced expression of the cellular components that contribute to blood-brain barrier integrity and 66% showed a higher expression of molecules that contribute to intestinal permeability.

Fiorentino M, Sapone A, Senger S, et al., "Blood–brain barrier and intestinal epithelial barrier alterations in autism spectrum disorders," Molecular Autism*, 2016; 7:49; Published online November 29 2016 doi:10.1186/s13229-016-0110-z.*

I'm just Mad about Saffron

One in ten adults in the United States claim that they suffer from significant depression, with billions of dollars spent on antidepressants annually. Over the last 25 years, the use of antidepressant medication in the U.S. has gone up 400%**.** Among Americans aged 12 years and over, 11% now take antidepressant medication. The problem with prescription antidepressants is that 90% of people experience at least one of numerous possible side effects, which include anxiety, suicidal longings, insomnia, constipation, and weight gain.

The herb saffron was used for depression in traditional Persian medicine and for treating impaired blood circulation in traditional Chinese medicine. In a recent study published in *Pharmacopsychiatry*, researchers demonstrated that saffron significantly improved symptoms of depression and anxiety. In a randomized comparison study 66 patients with major depressive disorder accompanied by anxiety received either saffron (30 mg/day) or the SSRI citalopram (Celexa, 40 mg/day) for 6 weeks. Patients who received either saffron or citalopram showed significant improvement in scores of the Hamilton Rating Scale for Depression and Hamilton Rating Scale for Anxiety.

One of the many side effects of the SSRI fluoxetine (Prozac) is loss of libido and impaired sexual function. The saffron group experienced significant improvement in total sexual function (FSFI), arousal, lubrication, and pain compared to a control group. Both the control group and the saffron group continued to take the fluoxetine throughout the study, even though it was the cause of the sexual dysfunction!

Ghajar A, Neishabouri S, Velayati N, Crocus, "Sativus L. versus Citalopram in the Treatment of Major Depressive Disorder with Anxious Distress: A Double-Blind, Controlled Clinical Trial," Pharmacopsychiatry, *Oct 2016. DOI: 10.1055/s-0042-116159; Kashani L, Raisi F, Saroukhani S, et al., "Saffron for treatment of fluoxetine-induced sexual dysfunction in women: randomized double-blind placebo-controlled study,"* Human Psychopharmacology, *2013 Jan;28(1):54-60.*

Should the Farmer and the Pesticide Man be Friends?

Parkinson's disease (PD) can be positively linked to exposure to agricultural pesticides. Several studies have examined the association between PD and exposure to pesticides. A meta-analysis of peer-reviewed studies using 19 studies published between 1989 and 1999 was performed. The majority of the studies reported consistent elevation in the risk of PD with exposure to pesticides. The risk of PD increased with increased duration of exposure to pesticides, but no specific type of pesticide was identified.

Priyadarshi A, Khuder S, Schaub E, Shrivastava S, "A meta-analysis of Parkinson's disease and exposure to pesticides," Neurotoxicology, *2000 Aug;21(4):435-40.*

N-Acetyl Cysteine for Parkinsonism

Several years ago clinicians were reporting reversal of Parkinson's disease symptoms attributable to the use of the detoxifying amino acid glutathione administered intravenously. N-acetyl-cysteine (NAC) is an amino acid precursor to glutathione. Increasing NAC can reduce the toxicity of some prescription drugs, including cancer chemotherapy agents. Glutathione and N-acetyl cysteine are powerful antioxidants that support detoxification pathways and protect against environmental pollutants, toxic metals, and pharmaceuticals. Some of the conditions associated with the decline of detoxification pathways include cardiovascular disease, diabetes, cancer, and neurodegenerative conditions.

A recent study demonstrates a possible direct effect of NAC on the dopamine system in Parkinson's disease patients. This could explain some of the observed positive clinical effects. In another study, researchers at Oregon State University demonstrated that NAC may help maintain glutathione levels and prevent some of the factors that accelerate the aging process. The animal research study indicated that in younger animal cells, stress did not cause loss of glutathione at as rapid a rate as was observed in older animals. Preventive use of NAC increased glutathione levels in the older cells and offset cell death.

Monti D, Zabrecky G, Kremens D, Liang T, Wintering N, Cai J, et al., "N-Acetyl Cysteine May Support Dopamine Neurons in Parkinson's Disease: Preliminary Clinical and Cell Line Data," PLoS One, *2016; 11(6): e0157602. doi:10.1371/journal.pone.0157602; Thomas N, Shay K, Kelley A, Butler J, Hagen T, "Glutathione maintenance mitigates age-related susceptibility to redox cycling agents,"* Redox Biology, *2016; 10: 45 DOI: 10.1016/j.redox.2016.09.010.*

So Be Positive, or Else!

Positive psychological well-being increases longevity in everyone, sick or well, according to a meta-analysis of nearly 70 combined studies. The studies revealed protective effects of positive well-being reducing mortality among subjects with risk factors for cardiovascular disease, renal-failure, and those with HIV infections. Positive effects include emotional well-being, positive mood, joy, happiness, vigor, energy, and positive trait dispositions such as life satisfaction, hopefulness, optimism, and sense of humor. Positive psychological well-being was significantly associated with reduced cardiovascular mortality in healthy population studies, as well as reduced death rates in the patients with renal failure and with HIV infection. Toxic emotions such as bitterness, unforgiveness, resentment, retaliation, anger, hatred, guilt, shame, sorrow, regret, jealousy, helplessness, depression, anxiety, worry, apathy, loneliness, fear, and rejection can be the root of physiological symptoms, chronic health problems, and hormonal imbalances.

Chida Y, Steptoe A, "Positive psychological well-being and mortality: a quantitative review of prospective observational studies," Psychosomatic Medicine, *2008 Sep;70(7):741-56. doi: 10.1097/PSY.0b013e31818105ba. Epub 2008 Aug 25.*

Post-Cholesterol-Era Cardiovascular Screening

The last Health Bits & Pieces column reported that the 2015 U.S. Dietary Guidelines stated that there is not sufficient evidence to support limitation of dietary cholesterol in order to prevent cardiovascular disease. Data continues to accumulate that serum cholesterol levels often do not correlate with the occurrence of atherosclerosis. A more reliable screening tool is the coronary artery calcium (CAC) scan. A study has shown that half the people who were prescribed statins to lower cholesterol were not candidates for these dangerous drugs when their actual coronary calcium was measured. Many patients will not be willing to undergo a CAC scan; but it should be presented as an option, especially since statins carry so many risks and questionable benefit.

Epub at: https://health.gov/dietaryguidelines/2015/; Nasir K, Bittencourt M, Blaha M, et al., "Implications of Coronary Artery Calcium Testing Among Statin Candidates According to American College of Cardiology/American Heart Association Cholesterol Management Guidelines: MESA (Multi-Ethnic Study of Atherosclerosis)," Journal of the American College of Cardiology, *2015 Oct 13;66(15):1657-68. doi: 10.1016/j.jacc.2015.07.066; Okuyama H, Langsjoen P, Hamazaki T, Ogushi Y, Hama R, Kobayashi T, Uchino H, "Statins stimulate atherosclerosis and heart failure: pharmacological mechanisms,"* Expert Review of Clinical Pharmacology, *2015 Mar;8(2):189-99. doi: 10.1586/17512433.2015.1011125. Epub 2015 Feb 6.*

Health Bits and Pieces Summer 2017 (HFN 35:2)
Written By Dan Kenner

Glyphosate Protection

Glyphosate, the active ingredient in Roundup®, is the most popular herbicide used worldwide. The industry maintains it is minimally toxic to humans, but recent research disputes this claim. Glyphosate inhibits important detoxifying enzymes, cytochrome P450 (CYP) enzymes, which play a vital role in detoxifying xenobiotics (foreign chemicals). It disrupts the microbiome in the intestine, impairs methylation pathways, interferes with synthesis of amino acids and methionine, which leads to shortages in neurotransmitters and folate and disrupts the thyroid by inhibiting release of thyroid stimulating hormone (TSH) from the pituitary. Some of the disease conditions that can result from this include gastrointestinal disorders, obesity, diabetes, heart disease, depression, autism, infertility, cancer, and Alzheimer's disease.

A study published in the December 2014 issue of the *Journal of Environmental & Analytical Toxicology* found that the oral application of certain natural substances were able to effectively reduce urinary levels of glyphosate. The researchers used a combination of humic acids, activated charcoal, and sauerkraut juice. The study used cows suffering from symptoms of chronic botulism. The researchers concluded that a charcoal-sauerkraut juice combination with humic acids neutralized glyphosate, thereby reducing its excretion by urine and leading to the animals' improved health.

Samsel A, Seneff S, "Glyphosate's Suppression of Cytochrome P450 Enzymes and Amino Acid Biosynthesis by the Gut Microbiome: Pathways to Modern Diseases," Entropy *2013, 15(4), 1416-1463; doi:10.3390/e15041416; Gasnier C, Coralie Dumont C, Nora Benachour N, et al., "Glyphosate-based herbicides are toxic and endocrine disruptors in human cell lines,"* Toxicology, *Vol 262, Issue 3, pp 184-191; Gerlach H, Gerlach A, Schrödl W, Haufe S, Schottdorf B, "Oral Application of Charcoal and Humic Acids Influence Selected Gastrointestinal Microbiota, Enzymes, Electrolytes, and Substrates in the Blood of Dairy Cows Challenged with Glyphosate in GMO Feeds,"* Journal of Environmental and Analytical Toxicology *(2014) 5:256. doi: 10.4172/2161-0525.1000256.*

Sodium and Blood Pressure

A meta-analysis of seven studies involving a total of 6,250 subjects published in the *American Journal of Hypertension* found no convincing evidence that cutting salt intake reduces the risk for heart attacks, strokes, or death in people with normal or high blood pressure. As the authors of one recent paper wrote, "The overall evidence in the first half of the 1900s suggests that a low-salt diet was not a reasonable strategy for treating hypertension."

In 2011, European researchers publishing in the *Journal of the American Medical Association* reported that the less sodium that study subjects excreted in their urine, a reliable indicator of prior consumption, the *greater* their risk was of dying from heart disease. These findings call into question the common wisdom that excess salt is bad for you. But the evidence linking salt to heart disease has always been questionable.

The most recent study, The Framingham Offspring Study, led by researchers at the Boston University School of Medicine, followed 2,632 healthy men and women aged 30 to 64 years with normal blood pressure over a period of 16 years. The researchers compared the participants' sodium intake with their blood pressure readings. Surprisingly the participants who consumed lower quantities of sodium daily had higher blood pressure than those who consumed more. One of the authors of the study, Lynn Moore, DSc said, "We saw no evidence that a diet lower in sodium had any long-term beneficial effects on blood pressure. Our findings add to growing evidence that current recommendations for sodium intake may be misguided."

Taylor R, Ashton K, Moxham T, Hooper L, Ebrahim S, "Reduced Dietary Salt for the Prevention of Cardiovascular Disease: A Meta-Analysis of Randomized Controlled Trials (Cochrane Review)," American Journal of Hypertension *24, 843-853 (August 2011) doi:10.1038/ajh.2011.115; Labarthe D, Briss P, "Urinary Sodium Excretion and Cardiovascular Disease Mortality,"* Journal of the American Medical Association *2011;306(10):1084-1085. doi: 10.1001/jama.2011.1294; Moore L, Singer M, Bradlee M, "Low Sodium Intakes are Not Associated with Lower Blood Pressure Levels among Framingham Offspring Study Adults," presented at* Experimental Biology, *Apr 25, 2017.*

Gut Microbiome and Diabetes

A correlation between bacteria invading the intestinal epithelium (part of the mucous membrane) of the colon and the development of Type-2 diabetes has been observed in a new study by researchers at Georgia State University and published in *Cellular and Molecular Gastroenterology and Hepatology*. The research team compared colonic tissue sections for levels of mucosal immune cells in healthy individuals and individuals with diabetes. They observed activation of mucosal B cells probably resulting from microbiota encroachment, compromising the membrane barrier and causing a low-grade inflammation. Inflammation can desensitize and impair metabolic and insulin receptor signaling promoting obesity and poor blood sugar regulation.

This could explain the reported effect of berberine, an alkaloid found in several herbs, including goldenseal, Oregon grape, coptis and barberry, on lowering glucose linked to its significant antimicrobial activity against bacteria, fungi, parasites, worms, and viruses, while having no damaging effect on the commensal bacteria. Berberine prevents adhesion of bacteria to the cells of the intestinal mucosa. Its antibacterial effect could also be the source of its antidiabetic effect.

Chassaing B, Raja S, Lewis J, Srinivasan S, Gewirtz A, "Colonic Microbiota Encroachment Correlates with Dysglycemia in Humans," Cellular and Molecular Gastroenterology and Hepatology *2017;
DOI: 10.1016/j.jcmgh.2017.04.001.*

Statins May Cause Heart Disease

Japanese researchers have presented evidence that statins may cause coronary artery calcification and can impair heart and blood vessel function through the depletion of coenzyme Q-10 and other key factors. Statins also inhibit the synthesis of Vitamin K2, which protects arteries from calcification. Statins inhibit the biosynthesis of selenium-containing proteins, one of which is glutathione peroxidase, which suppresses oxidative stress. Impaired synthesis of selenium-bonded proteins as well as selenium deficiency can be a factor in congestive heart failure. Thus, they suggest, the widespread use of statin drugs should be critically reevaluated: *"Pharmacological evidence and clinical trial results support the interpretation that statins stimulate atherogenesis by suppressing vitamin K2 synthesis and thereby enhancing artery calcification. Statins cause heart failure by depleting the myocardium of CoQ10, 'heme A' and selenoproteins, thereby impairing mitochondrial ATP production. In summary, statins are not only ineffective in preventing CHD (congestive heart disease) events but instead are capable of increasing CHD and heart failure."*

Okuyama H, Langsjoen P, Hamazaki T, Ogushi Y, Hama R, Kobayashi T, Uchino H, "Statins stimulate atherosclerosis and heart failure: pharmacological mechanisms," Expert Review of Clinical Pharmacology *2015 Mar;8(2):189-99. doi: 10.1586/17512433.2015.1011125. Epub 2015 Feb 6.*

Nutrition for Autism

In a review of 17 studies, researchers reviewed the effects of various dietary supplements on children with autism spectrum disorder (ASD). Pharmaceutical and behavioral therapies have had limited success with this affliction. Although there is no accepted treatment for ASD, use of dietary interventions and nutritional support in these patients has increased. Many children with ASD take nutritional supplements and follow diets such as a gluten-free and casein-free (GFCF) diet.

In this review published in *Brain Development*, researchers explored the clinical efficacy and safety of dietary supplements in children with autism evaluating the effectiveness of amino acids, fatty acids, and specific vitamins and minerals. The amino acid n-acetylcysteine (NAC) was shown to improve irritability in a dose-dependent manner. N-acetylcysteine provides antioxidant effects to restore glutathione availability. Oxidative stress is a hypothesized mechanism in the pathogenesis of ASD. These patients have been found to have elevated oxidative stress markers as well as decreased levels of glutathione.

Ascorbic acid and methylcobalamin (Vitamin B-12) supplementation were also found to be helpful. After NAC and ascorbic acid, Vitamin B-6 and magnesium have been shown to be involved in brain neurotransmitter synthesis, such as serotonin, dopamine, and norepinephrine. A B-12 deficiency has been associated with defects in myelin synthesis and neurotransmitter imbalances.

Gogou M, Kolios G, "The effect of dietary supplements on clinical aspects of autism spectrum disorder: A systematic review of the literature," Brain Development *2017 Apr 21. pii: S0387-7604(17)30113-4. doi: 10.1016/j.braindev.2017.03.029. [Epub ahead of print]*

Health Bits and Pieces (HFN 35:3)
Written By Dan Kenner

Chemotherapy and Metastasis

It is well established that radiation can cause cancer, and recent studies have shown that cancer surgery, even biopsies, can trigger metastasis in cancer patients. New research now shows that some chemotherapy drugs can trigger metastasis as well.

Scientists from Albert Einstein College of Medicine have found that drugs commonly used to treat breast cancer can actually cause cancer cells to spread throughout the body. The researchers found that malignant cells can combine with the white blood cells called "macrophages" and augment passage for cancer cells into the bloodstream. The technical name for the clustering of those three types of cells is "tumor microenvironment of metastasis (TMEM)." The researchers found that when they gave the chemotherapy drug Paclitaxel and several other drugs to lab mice it set off a chain of events that allowed the cancer to spread. In 20 patients with breast cancer the tumor microenvironment was as much as five times *more* hospitable to cancer cells after drug treatment. If the drugs are used prior to surgery, which is the norm, the patients would be exposed to an even higher risk of life-threatening metastatic disease.

Another study analyzed human data and found that the gene ATF3 is over-expressed in patients treated with chemotherapy, compared to patients who were not. The ATF3 gene is a transcription factor activated by stress and is implicated in the mechanism of cellular stress and is found in many types of cancer cells. According to these findings, Paclitaxel might have a carcinogenic effect by activating this gene. The ATF3 gene seems to help distribute the "seeds" (cancer cells) and fertilize the "soil" (the tissues) by improving the tissue microenvironment for cancer cells to develop and flourish.

Karagiannis G, Pastoriza J, Wang Y, et al., "Neoadjuvant chemotherapy induces breast cancer metastasis through a TMEM-mediated mechanism," Science Translational Medicine *05 Jul 2017; Vol. 9, No. 397, eaan0026 doi: 10.1126/scitranslmed.aan0026; Chang Y, Jalgaonkar S, Middleton J, Hai T, "Stress-inducible gene Atf3 in the non-cancer host cells contributes to chemotherapy-exacerbated breast cancer metastasis,"* Proceedings of the National Academy of Sciences USA, *2017 Aug 22; 114(34): E7159-E7168; doi: 10.1073/pnas.1700455114. Epub 2017 Aug 7.*

Glyphosate in Water

In the 1990s, regulators at the U.S. Environmental Protection Agency determined that 1.75 mg per kilogram of bodyweight per day is the safe allowable daily intake level for glyphosate. According to the EPA website, glyphosate is among a list of "Regulated Drinking Water Contaminants." But the website also says that long-term exposure to glyphosate at only 700 ppb can cause people "problems with their kidneys or reproductive difficulties." It states that there is a risk of exposure in drinking water due to "runoff from herbicide use."

Total exposure is much greater than industry scientists and U.S. regulators originally estimated. Independent research shows that probable harm to human health begins at really low levels of exposure – at only 0.1 ppb of glyphosate. 0.1 ppb is the permitted level for glyphosate and all other herbicides in European Union tap water.

EPA, Drinking Water Contaminants – Standards and Regulations, Table of Regulated Drinking Water Contaminants, at https://www.epa.gov ground-water-and-drinking-water/table-regulated-drinking-water-contaminants#Inorganic; Mesnage R, Arno M, Costanzo M, Malatesta M, Seralini G, Antoniou M, "Transcriptome profile analysis reflects rat liver and kidney damage following chronic ultra-low dose Roundup exposure," Environmental Health, *2015;14:70, at. http://ehjournal.biomedcentral.com/articles/10.1186/s12940-015-0056-1.*

Round it Down! Glyphosate in Food

Laboratory studies have measured the quantities of glyphosate in common snack foods. Co-laboratory Director Vu Lam of Anresco Laboratories in San Francisco says, "We use LC/MS/MS to detect Glyphosate and AMPA. With our modifications to various methods, we are able to detect many levels of contaminants in food products at levels as low as 5 ppb, and even lower."

Here are a few samples of glyphosate levels: Cheerios – 1125.3 ppb, Wheaties – 31.2 ppb, Corn Flakes – 78.9 ppb, Special K – 74.6 ppb, Ritz Crackers – 270.24 ppb, Oreo Original – 289.47 ppb, Lay's Potato Chips – 452.71 ppb, Fritos Corn Chips – 174.71 ppb, 365 Organic Golden Round Crackers – 119.12 ppb.

https://detoxproject.org/food-testing-results/

Glyphosate in Humans and Animals

Scientists found that "chronically ill humans had significantly higher glyphosate residues in urine than healthy humans" in a study on humans and livestock. People who eat conventional diets have much higher glyphosate residues than those who eat organic food. In a study published in the *Journal of Environmental & Analytical Toxicology*, researchers state that "Glyphosate was significantly higher in humans [fed] conventional [food] compared with predominantly organic [fed] humans. Also the glyphosate residues in urine were grouped according to the human health status. Chronically ill humans had significantly higher glyphosate residues in urine than healthy humans."

German scientists investigating the increased incidence of botulism disease in cattle over the past 10-15 years have found that glyphosate and Roundup® were toxic to beneficial gut bacteria that inhibit the growth of the botulism-causing bacterium *Clostridium botulinum*, but non-toxic to the botulism-causing bacteria themselves. In other words, glyphosate supports the growth of botulism-causing bacteria. The conclusion of the researchers was that ingestion of glyphosate-contaminated feed could be a significant factor predisposing poultry to diseases caused by *Clostridium botulinum* and could also possibly explain the now-widespread contamination of poultry products with pathogenic Salmonella and *E. coli* strains.

Recent independent peer-reviewed studies found that low doses of Roundup® or glyphosate-based herbicides were likely to damage the liver and kidneys of rats at ultra-low-dose levels "in the range of what are now generally considered 'safe' for humans."

Krüger M, Schledorn P, Schrödl W, Hoppe H, Lutz W, et al., “Detection of Glyphosate Residues in Animals and Humans,” Journal of Environmental and Analytical Toxicology, *4:210 (2014); Krüger M, Shehata A, Schrödl W, Rodloff A, “Glyphosate suppresses the antagonistic effect of Enterococcus spp. on Clostridium botulinum,”* Anaerobe, *2013;20:74-78, at https://www.ncbi.nlm.nih.gov/ pubmed/23396248; Shehata A, Schröd W, Aldin A, Hafez H, Krüger M, “The effect of glyphosate on potential pathogens and beneficial members of poultry microbiota in vitro,”* Current Microbiology, *2013;66(4):350-8, at http://link. springer.com/article/10.1007%2Fs00284-012-0277-2; Larsen K, Najle R, Lifschitz A, et al., “Effects of Sublethal Exposure to a Glyphosate-Based Herbicide Formulation on Metabolic Activities of Different Xenobiotic-Metabolizing Enzymes in Rats*,” International Journal of Toxicology, *2014, at https://www.ncbi.nlm.nih.gov/pubmed/2498512 1.*

Fat Intake Reduces Risk of Cardiovascular Disease

Fats get a bad rap in conventional medicine because many doctors instruct patients to reduce fat intake even though there are great benefits from consuming healthy fats and oils. According to a recent study published in *The Lancet*, researchers demonstrated that a diet high in fat consumption was associated with a lower mortality than a diet high in carbohydrate intake, which was connected with an *increased* risk of mortality. The study extended over ten years and included 135,335 individuals 35 to 70 years of age from 18 countries in 5 continents. The researchers evaluated the relationship between the consumption of total fat, each type of fat, and carbohydrate intake with total mortality and cardiovascular disease. Surprisingly, a higher intake of *saturated* fat was associated with a reduced risk of stroke. This study should help to demolish the myth that fats are a causal or contributing factor to increased risk of cardiovascular disease mortality.

There was also a review just published in *Circulation* last June in which researchers demonstrated that lowering saturated fats and increasing unsaturated fats, both polyunsaturated and monounsaturated, was associated with lower rates of cardiovascular disease.

Dehghan M, Mente A, Zhang X, et al., “Associations of fats and carbohydrate intake with cardiovascular disease and mortality in 18 countries from five continents (PURE): a prospective cohort study,” The Lancet*, 2017; Aug 28. pii: S0140-6736(17)32252-3; doi: 10.1016/S0140-6736(17)32252-3; Sacks F, Lichtenstein A, Wu J, et al., “Dietary Fats and Cardiovascular Disease: A Presidential Advisory From the American Heart Association,”* Circulation, *2017 Jul 18;136(3):e1-e23; doi: 10.1161/CIR.0000000000000510. Epub 2017 Jun 15.*

Resveratrol Improves Arterial Rigidity in Diabetics

Resveratrol is a red-wine polyphenol with powerful antioxidant and anti-inflammatory properties. Resveratrol activates sirtuins, proteins activated by caloric restriction that have anti-sclerotic effects on the arterial wall.

In a study published last July in the *International Heart Journal*, researchers demonstrated improved arterial flexibility in patients with Type-II diabetes mellitus. This study consisted of 50 patients who received either 100 milligrams of resveratrol or a placebo for 12 weeks. The researchers assessed body weight, body mass index, a comprehensive metabolic panel, HbA1c, a lipid profile, oxidative stress markers, blood pressure, and cardio-ankle vascular index, a predictor of future cardiovascular disease. All of the patients followed the same diet and exercise routine. After 12 weeks, the cardio-ankle vascular index and systolic blood pressure significantly decreased in the resveratrol group compared to the placebo group. Oxidative stress also decreased in the resveratrol group.

Health Bits and Pieces (HFN 35:4)
Written By Dan Kenner

Choosing your Poison

The cancer treatment industry has been heavily promoting "precision oncology," using genetic testing to attempt to select drugs that will target the patient's specific mutations in tumor tissue. The goal is long-term remission and increased survival time. The hope for this new approach to oncology is built on a very small pool of apparent responders. In a search of 489 articles, 32 exceptional responders were identified. Many patients have undergone genetic sequencing in the past decade. One commercial provider of tumor profiling, Foundation Medicine, has sequenced at least 18,000 patients. The "Molecular Analysis for Therapy Choice" at the U.S. National Cancer Institute (the NCI-MATCH) trial enrolled 795 patients with relapsed solid tumors or lymphoma, but as of May 2016 it was only able to successfully pair 2% of patients with a targeted therapy. It is estimated that only 1.5% of patients receiving genetically customized therapy could benefit. It is also not clear from the data if the positive responses resulted from the treatment or if they reflect the patient's underlying biology.

Johnson D, Dahlman K, Knol J, et al., "Enabling a genetically informed approach to cancer medicine: A retrospective evaluation of the impact of comprehensive tumor profiling using a targeted next-generation sequencing panel," Oncologist *19:616– 622 (2014) Crossref, Medline; Prasad V, "Perspective: The precision-oncology illusion,"* Nature *537, S63 (08 September 2016); doi:10.1038/537S63a.*

Acetyl L-Carnitine and Depression

A review published in *Psychosomatic Medicine* stated that the amino acid acetyl L-Carnitine, one of the most researched brain nutrients, can significantly reduce symptoms of depression. The structure of acetyl L-Carnitine is similar to the neurotransmitter acetylcholine, such that it can stimulate acetylcholine receptors in the brain. In nine randomized controlled trials (RCTs), 231 individuals were treated with acetyl L-Carnitine, 216 with a placebo, and 20 with no intervention. The results showed that acetyl L-Carnitine significantly reduced symptoms of depression. In three other RCTs, acetyl-L-Carnitine was compared with antidepressant drugs, with 162 participants in each group. Acetyl L-Carnitine was found to be as effective as antidepressants in decreasing depression symptoms. With no negative side effects, the amino acid would be an obvious better choice.

Veronese N, Stubbs B, et al., "Acetyl-l-carnitine Supplementation and the Treatment for Depressive Symptoms: A Systemic Review and Meta-analysis," Psychosomatic Medicine*, 25 October 2017, doi: 10.1097/PSY.0000000000000537. [Epub ahead of print]*

Leaky Gut and Glutamine

In a European study, researchers found that supplementation with glutamine prior to exercise improves intestinal permeability in runners. "Leaky gut" is a disorder of selective permeability of the intestinal barrier. The intestinal barrier is only one-cell-layer thick and excessive permeability can result in large molecules (macromolecules) and bacteria entering the blood or lymph. The body then often reacts with an inflammatory response that can affect many types of tissues. Leaky gut is a significant issue for athletes because of the sometimes-excessive stress they put on their bodies. Gastrointestinal discomfort is a common complaint among endurance athletes who participate in marathons and triathlons as well as athletes who engage in heavy exercise such as powerlifting.

Pugh J, Sage S, et al., "Glutamine supplementation reduces markers of intestinal permeability during running in the heat in a dose-dependent manner," European Journal of Applied Physiology, *2017; 117(12):2569-2577. doi: 10.1007/s00421-017-3744-4. Epub 2017 Oct 20.*

Resveratrol and Diabetes

Resveratrol is a grape polyphenol with powerful antioxidant and anti-inflammatory properties. Its cardiovascular, anti-carcinogenic, and anti-aging benefits have been widely publicized. A systematic review of 9 randomized controlled trials showed that resveratrol, at a dosage of at least 100 mg/day, significantly reduced fasting glucose levels in individuals with Type-II diabetes. It also reduced blood pressure, fasting insulin levels, and HOMA-IR, which is a method for assessing pancreatic β-cell function and insulin resistance. This study used the same dosage of 100 mg, which has been shown to reduce fasting glucose level, as used in a previous study published earlier this year in the *International Heart Journal* (where researchers demonstrated resveratrol's benefits in improving arterial stiffness and reducing oxidative damage in patients with Type-II diabetes) and as reported in the previous edition of Health Bits & Pieces (Fall 2017; Vol. 35, No.3; p. 23).

Resveratrol can benefit diabetics by means of several mechanisms. It facilitates vasodilatation by binding and activating estrogen receptors to increase nitric-oxide availability. It also decreases oxidative stress in vascular endothelial cells, such as those in the arterial lining. Oxidative stress is elevated in chronic diseases like diabetes and obesity. These results support the ability of resveratrol supplementation to improve symptoms and slow progression in patients with Type-II diabetes.

Zhu X, Wu C, et al., "Effects of resveratrol on glucose control and insulin sensitivity in subjects with type 2 diabetes: systematic review and meta-analysis," Nutrition & Metabolism, 2017 Sept 22;14:60.

Autism and Supplements

Autism spectrum disorder (ASD) is associated with various genetic, neurologic, metabolic, and immunologic factors. Pharmaceutical and behavioral therapies are often used but their success is limited. Since there is no effective conventional treatment, dietary interventions and nutritional supplements are often used with these patients. In a review published in the *European Journal of Nutrition,* researchers evaluated the safety and effectiveness of five dietary supplements in children with autism. The review examined 18 studies evaluating vitamin B-6, magnesium, methylcobalamin (a type of Vitamin B-12), Vitamin D, omega-3 fatty acids, and folinic acid. Previous research has shown that Vitamin B-6 and magnesium are involved in the synthesis of three brain neurotransmitters: serotonin, dopamine, and norepinephrine. Vitamin B-12 deficiency has been associated with neurotransmitter imbalances because it is necessary for the synthesis of myelin, the membrane that envelops nerve fibers.

According to the results of the review, Vitamin B-12, Vitamin D, and essential fatty acids were recommended to address a deficiency, but Vitamin B-6 and magnesium were not. Further research is needed to determine any beneficial effect on ASD. One of the studies on Vitamin D suggested that taking it could significantly improve the core symptoms of ASD. Folinic acid was found to be effective and also improve the symptoms of ASD. Autism Spectrum Disorder has been associated with abnormalities of folic-acid metabolism. Studies have also shown a deficiency of cerebral folate in autism. Folate must be obtained in the diet or from supplementation since the body cannot synthesize it. In one study, researchers observed significant improvements in verbal communication and other ASD symptoms after 12 weeks of supplementation with folinic acid.

Li YJ, Li YM, Xiang D, "Supplement intervention associated with nutritional deficiencies in autism spectrum disorders: a systemic review," European Journal of Nutrition*, 2017; September 7. doi: 10.1007/s00394-017-1528-6.*

Vitamin D or Flu Vaccine?

A meta-analysis of 25 high-quality studies undertaken and published in the *British Medical Journal* found that Vitamin-D supplementation is a safe and effective way to minimize risk of acute respiratory infections. The studies reviewed comprised data from almost 11,000 participants. All of the studies were randomized, double-blind, placebo-controlled studies that had been approved by a research ethics committee. According to the meta-analysis, one person out of every 33 taking Vitamin-D supplements would be spared infection, which is more effective than flu vaccination, which supposedly needs to be used in 40 people in order to prevent one case.

The study found that people who took daily or weekly Vitamin-D supplements were less likely to report acute respiratory infections, and that people with significant Vitamin-D deficiencies (blood levels below 10 [ng/mL]) taking a Vitamin-D supplement cut their risk of respiratory infection in half.

Other studies have illuminated risk vs. benefit of influenza vaccination. One study showed that people who received the seasonal flu vaccine in 2008 had twice the risk of getting the H1N1 "swine flu" compared to those who didn't receive a flu shot. Another study showed that children who receive influenza vaccinations have a three times higher risk of hospitalization from influenza.

Research also shows that taking statin drugs may undermine your immune system's ability to respond to the flu vaccine. Because of the low rate of efficacy of the flu vaccine, the effect of taking a statin could offset any possible benefit from a vaccine.

Martineau A, Jolliffe D, Hooper R, et al., "Vitamin D supplementation to prevent acute respiratory tract infections: systematic review and meta-analysis of individual participant data," British Medical Journal*, 2017; 356 :i6583 http://www.bmj.com/content/356/bmj.i6583; Skowronski D, De Serres G, Crowcroft N, et al., "Association between the 2008–09 seasonal influenza vaccine and pandemic H1N1 illness during spring–summer 2009: four observational studies from Canada,"* PLoS Medicine*, 2010; Apr 6;7(4); American Thoracic Society, "Children Who Get Flu Vaccine Have Three Times Risk Of Hospitalization For Flu, Study Suggests,"* ScienceDaily*, 20 May 2009, www.sciencedaily.com/releases/2009/05/090519172045.htm; Black S, Nicolay U, Del Giudice G, Rappuoli R, "Influence of Statins on Influenza Vaccine Response in Elderly Individuals,"* Journal of Infectious Diseases*, 2016; Apr 15;213(8):1224-8. doi: 10.1093/infdis/jiv456. Epub 2015 Oct 28.*

Health Bits and Pieces (HFN 37:3)
By Dan Kenner

Preventing Diverticulitis Attacks

Japanese researchers have discovered that burdock root tea can prevent episodes of acute colonic diverticulitis (ACD). Parts of the burdock plant have traditionally been used medicinally in Japan to treat digestive problems and inflammation. Burdock, known as *gobo* in Japanese, is eaten as a vegetable in the traditional Japanese diet. A randomized clinical trial at Keiyu Hospital in Yokohama, Japan, demonstrated that daily intake of burdock tea could be an effective strategy for preventing recurrence of ACD. An experimental group received 1.5 g of burdock tea three times a day, while the control group received no treatment. Burdock tea treatment significantly reduced the rate of recurrence and lengthened the intervals between ACD attacks.

Mizuki A, Tatemichi M, Nakazawa A, et al., "Effects of Burdock tea on recurrence of colonic diverticulitis and diverticular bleeding: An open-labelled randomized clinical trial," Scientific Reports*, Volume 9, Article number: 6793 (2019).*

Third Eye in the Gut

Melatonin is a hormone derived from serotonin and is known to initiate sleep in humans. Beyond this, it has an inhibitory action on gastric acid secretion and seems to control the lower esophageal sphincter. The main source of melatonin is the pineal gland but it has also been detected in cells of the digestive tract. Low levels of melatonin can lead to gastroesophageal reflux disease (GERD). This has led to research on a possible therapeutic benefit of melatonin supplementation for treatment of GERD. In a comparison study researchers enrolled 27 people who had GERD and nine healthy individuals as controls. The 36 subjects were divided into 4 groups: control subjects, patients with reflux disease treated with melatonin alone, patients treated with omeprazole (Prilosec) alone, and those taking a combination of melatonin and omeprazole for 4 and 8 weeks. At baseline, at least 18 patients in the treatment groups were symptomatic and had reduced lower esophageal sphincter (LES) pressure and a more acidic pH above the LES. Melatonin levels were also lower in the treatment groups than in the control group. At 4 and 8 weeks, almost all participants experienced relief of heartburn and stomach pain. The combination of melatonin and omeprazole relieved their symptoms sooner, but LES pressure was increased in the melatonin groups and unchanged with omeprazole alone. Stomach pH increased in all groups with combination therapy showing the greatest effect. In other research, a single-blind study of more than 300 patients compared a combination of melatonin and a vitamin product to omeprazole and showed that control of symptoms was better with melatonin.

Kandil T, Mousa A, El-Gendy A, Abbas A, "The Potential Therapeutic Effect of Melatonin in Gastro-esophageal Reflux Disease," BMC Gastroenterology *2010; 10:7; Brzozowska I, Strzalka M, Drozdowicz D, Konturek S, Brzozowski T, "Mechanisms of esophageal protection, gastroprotection and ulcer healing by melatonin; implications for the therapeutic use of melatonin in gastroesophageal reflux disease (GERD) and peptic ulcer disease,"* Current Pharmaceutical Design*, 2014; 20(30): 4807-15;Pereira R, "Regression of gastroesophageal reflux disease symptoms using dietary supplementation with melatonin, vitamins and amino acids: comparison with omeprazole,"* Journal of Pineal Research, *2006; 41(3): 195-200.*

Fish-Oil Benefits Revisited

Recent research challenged the benefit of fish oils for cardiovascular health. A new meta-analysis by researchers at Harvard School of Public Health and Brigham and Women's Hospital reviewed the evidence from thirteen clinical trials. The trials that were reviewed included over 127,000 subjects with average age 64.3 years over a five-year period. This was a significantly larger survey of evidence than any previous review. The meta-analysis confirmed that people who received omega-3 fish-oil capsules enjoyed significantly reduced risks for cardiovascular and coronary heart disease with fewer adverse outcomes. The research team concluded that supplementing with fish-oil capsules reduced the risk of a heart attack by 8%, reduced the risk of developing coronary heart disease by 5%, and the risk of dying from it by 8%. The paper's lead author, Yang Hu, reported, "We found significant protective effects of daily omega-3 supplementation against most CVD outcome risks, and the associations appeared to be in a dose-response manner."

Aung T, Halsey J, Kromhout D, et al., "Associations of Omega-3 Fatty Acid Supplement Use With Cardiovascular Disease Risks - Meta-analysis of 10 Trials Involving 77, 917 Individuals," JAMA Cardiology, *2018; 3(3):225-233. doi:10.1001/jamacardio.2017.5205; Hu Y, Hu F, Manson J, "Marine Omega-3 Supplementation and Cardiovascular Disease: An Updated Meta-Analysis of 13 Randomized Controlled Trials Involving 127,477 Participants,"* Journal of the American Heart Association, *2019; 8(19):e013543, doi: 10.1161/JAHA.119.013543. Epub 2019 Sep 30.*

Vitamin E in Hospital Medicine

Past research has shown that Vitamin-E therapy is not effective for preventing myocardial infarction (heart attack, or MI), but new research suggests that Vitamin E can be used as an acute therapy in patients suffering from the disease. The medical treatment used to restore blood flow to the heart tissue is called reperfusion therapy. Reperfusion resulting from the emergency intervention can cause substantial damage to the heart due to aggravated inflammatory and oxidative stress responses. The research showing the benefit of using Vitamin E is highly significant because there is currently no drug available in the clinic that can reduce the cardiac damage caused by reperfusion injury. Cardiac-tissue damage caused by oxidative stress and infiltration of the damaged tissues by white blood cells is effectively counteracted by administering Vitamin E at the time of the procedure. The authors state that therapeutic use of Vitamin E "holds promise as an inexpensive and readily translatable novel treatment preventing cardiac damage and thereby reducing mortality and morbidity in patients who suffer a MI."

Wallert M, Ziegler M, Wang X, et al., "α-Tocopherol preserves cardiac function by reducing oxidative stress and inflammation in ischemia/reperfusion injury," Redox Biology, *2019; Volume 26, 101292, at https://doi.org/10.1016/j.redox.2019.101292*

Vitamin C in Hospital Medicine

Researchers from the University of Sydney and the University of Helsinki who analyzed data from12 clinical trials with 1766 patients found that on average Vitamin-C administration decreased stays in the Intensive Care Unit (ICU) by 7.8%. Oral administration of an average dose of 2 grams per day in another 6 trials reduced the length of stay in an ICU an average of 8.6%. Patients requiring mechanical ventilation for more than 24 hours who received Vitamin C had an 18.2% reduction in the required duration of mechanical ventilation in 3 trials. A previous study found that recommended levels of Vitamin C for critically ill patients are too low. Patients receiving an average daily intake of 125 mg of Vitamin C per day, and 200 mg in those receiving IV nourishment, still had low blood Vitamin-C levels, which were only one-third of what would have been expected with the supplementation. Patients with septic shock had significantly lower levels than other patients and had higher levels of inflammation. The researchers concluded that critically ill patients require a daily dose of over 2,000-3000 mg of Vitamin C every day to normalize plasma levels.

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Hemilä H, Chalker E, "Vitamin C Can Shorten the Length of Stay in the ICU: A Meta-Analysis," Nutrients, *2019,* 11*(4), 708, at https://doi.org/10.3390/nu11040708; Carr A, Rosengrave P, Bayer S, Chambers S, Mehrtens J, Shaw G, "Hypovitaminosis C and vitamin C deficiency in critically ill patients despite recommended enteral and parenteral intakes,"* Critical Care *21: Article number 300 (2017).*

Vitamin D for Cancer Survival

Scientists from the United States and China analyzed evidence from 52 randomized, controlled clinical trials involving 75,454 participants and found that Vitamin-D supplementation was associated with a reduced risk of cancer mortality by 16%. The US-Chinese team found that Vitamin-D3 supplements produced a greater reduction in the risk for death from cancer than Vitamin-D2 supplements. The authors stated that "According to these findings, supplementation with Vitamin D3 for at least three years should be considered."

Zhang Y, Fang F, Tang J, Jia L, Feng Y, Xu P, Faramand A, "Association between vitamin D supplementation and mortality: systematic review and meta-analysis," British Medical Journal, *2019;366:l4673. doi: 10.1136/bmj.l4673.*

Health Bits and Pieces (HFN 37:2)

By Dan Kenner, Ph.D., LAc

Healing Cataracts

A cataract is a clouding of the normally clear lens of the eye. Roughly 20% of all individuals over age 60 have at least early-stage cataracts, and by age 75, that number goes up to 80 percent. Currently, surgery is the primary form of treatment. The amino acid n-acetyl-carnosine (NAC) provides beneficial effects to the eye. It may even have a therapeutic effect on cataracts. One study used NAC in the form of eye drops and concluded that "l-carnosine showed a dramatic inhibition of advanced glycation end product formation" and that it "offers prospects for investigating new methods of treatment for diabetic cataract and any diseases that are caused by glycation." Glycation is the bonding of a sugar molecule to a protein or lipid molecule without enzymatic regulation resulting in damaging end products. Another study used solid lipid nanoparticles that carry NAC molecules directly through the cornea to treat cataracts. The researchers claimed that NAC nanoparticles "may revolutionize cataract treatment and reversal, by improving drug permeation, reducing toxicity and no damage to corneal tissue."

Abdelkader H, Longman M, Alany RG & Pierscionek B, "On the Anticataractogenic Effects of L-Carnosine: Is It Best Described as an Antioxidant, Metal-Chelating Agent or Glycation Inhibitor?" Oxidative Medicine and Cellular Longevity, *Vol. 2016, Article ID 3240261, 11 pages, at https://doi.org/10.1155/2016/3240261; Wang Y, Xia R, Hu H, Peng T, "Biosynthesis, characterization and cytotoxicity of gold nanoparticles and their loading with N-acetylcarnosine for cataract treatment,"* Journal of Photochemistry and Photobiology B: Biology *2018; 187: 180-183; doi: 10.1016/j.jphotobiol.2018.08.014; Epub 2018 Aug 16; Budama-Kilinc Y, Cakir-Koc R, Kecel-Gunduz S, et al., "Novel NAC-loaded poly(lactide-co-glycolide acid) nanoparticles for cataract treatment: preparation, characterization, evaluation of structure, cytotoxicity, and molecular docking studies,"* PeerJ *2018; 6:e4270.*
doi: 10.7717/peerj.4270, eCollection 2018.

Gateway Drug to Addiction Cure

The latest version of reefer madness is the use of cannabidiol (CBD) for treatment of drug addiction. Opioid abuse is a global public health problem. Fewer than a quarter of one million people suffering today from opiate dependency actually receive treatment. There are numerous therapies available for opioid-dependent patients, but unfortunately most patients relapse. Early Phase I research studies with animal models have consistently demonstrated that cannabidiol (CBD), a non-psychoactive component of cannabis, specifically inhibited cue-induced heroin-seeking behavior. The selective effect of CBD on drug-seeking behavior was pronounced after 24 hours and endured even two weeks after the last drug administration. CBD in this study and in various clinical studies was also found to be well tolerated and safe in human subjects. CBD has neuroprotective, anti-inflammatory, and immunomodulatory benefits and applications in various clinical syndromes.

Hurd Yasmin, "Acute and Short-term Effects of cannabidiol administration on cue-induced craving in drug-abstinent heroin dependent humans," Clinical Trials, *gov Identifier: NCT01605539, at https://clinicaltrials.gov/;*

Maroon J, Bost J, "Review of the neurological benefits of phytocannabinoids," Surgical Neurology International *2018; 9: 91, published online 2018 Apr 26; doi: 10.4103/sni.sni_45_18.*

Gum Disease and Alzheimer's

Dementia is now the fifth greatest cause of death around the World. About 70% of these deaths can be attributed to Alzheimer's Disease (AD), yet the cause of this disease is not understood. Research has shown that gum infections exacerbate symptoms in AD animal research models and cause AD-like brain inflammation, neuronal damage, and amyloid plaques in healthy mice. New evidence suggests that amyloid proteins may be a defense against bacteria. This has inspired studies looking at bacteria in AD, particularly those that cause gum disease, which is a known risk for the condition because bacteria involved in gum disease and other illness have been found after death in the brains of those with disease. The bacterium *Porphyromonas gingivalis* has been found to inflame parts of the brain affected by AD. Gum disease is very common, affecting about one-third of all people. Chronic periodontitis and infection with *Porphyromonas gingivalis* have been identified as significant risk factors for developing amyloid β plaques, dementia, and AD. *Porphyromonas gingivalis* is mainly found in periodontal infections, but it is also found in healthy individuals with no oral disease. Translocation to other tissues has resulted in its appearance in coronary arteries, placenta, and liver tissue.

Dominy S, Lynch C, Ermini F, et al., "Porphyromonas gingivalis in Alzheimer's disease brains: Evidence for disease causation and treatment with small-molecule inhibitors," Science Advances 2019; 5(1): eaau3333,
doi: 10.1126/sciadv.aau3333.

Eggs and Cardiovascular Disease

Eggs have long been targeted as a food to be avoided to prevent high blood cholesterol and alleged cardiovascular risk. Egg yolks are rich in fat and targeted as a dietary hazard for those who want to prevent cardiovascular disease. A 13-year-long Swedish epidemiological study involving over 70,000 men and women found no connection between higher egg consumption and the risk for cardiovascular disease: heart attack, heart failure, or stroke. Another smaller study in Finland followed 1,032 middle-aged men for 20 years. It found no links between higher egg or cholesterol consumption and higher risks for coronary artery disease. The no-risk finding of the Finnish study held true even among study participants with ApoE genotypes that raise the risk for developing cardiovascular disease. Two small (1,950 to 2,497 participants respectively) but lengthy (22 year) studies from the same Finnish team found no links between higher egg consumption and a higher risk for developing stroke or dementia.

Larsson S, Åkesson A, Wolk A, "Egg consumption and risk of heart failure, myocardial infarction, and stroke: results from 2 prospective cohorts," American Journal of Clinical Nutrition, *2015; 102(5): 1007-13, doi: 10.3945/ajcn.115.119263; Epub 2015 Sep 23; Abdollahi A, Virtanen H, Voutilainen S, et al., "Egg consumption, cholesterol intake, and risk of incident stroke in men: the Kuopio Ischaemic Heart Disease Risk Factor Study,"* American Journal of Clinical Nutrition, *2019; pii: nqz066, doi: 10.1093/ ajcn/nqz066. [Epub ahead of print]; Virtanen J, et al., "Associations of egg and cholesterol intakes with carotid intima-media thickness and risk of incident coronary artery disease according to apolipoprotein E phenotype in men: the Kuopio Ischaemic Heart Disease Risk Factor Study,"* American Journal of Clinical Nutrition, *2016; 103(3):895-901, doi: 10.3945/ajcn.115.122317; Epub 2016 Feb 10; Ylilauri M,* *Voutilainen S, Lönnroos E, et al., "Association of dietary cholesterol and egg intakes with the risk of incident dementia or Alzheimer disease: the Kuopio Ischaemic Heart Disease Risk Factor Study,"* American Journal of Clinical Nutrition*, 2017;105(2): 476-484, doi: 10.3945/ajcn.116.146753; Epub 2017 Jan 4.*

Essential Oils for ADHD

Attention deficit hyperactivity disorder is a brain dysfunction causing symptoms of poor attention, hyperactivity, impulsive behavior, or all three. Symptoms vary from person to person, but many people with attention deficit hyperactivity disorder have sleep problems due to hyperactivity, and have issues relaxing, falling asleep, and staying asleep. Currently there is no known cure. Researchers at the University of Minnesota found that inhalation of lavender essential oil promotes relaxation and improves sleep in ADHD patients. Vetiver essential oil seems to help people to concentrate. Participants showed increased attention levels, brain activity, learning skills, and memory after inhalation of lavender oil. High concentrations of 1,8-cineole within rosemary essential oil may also help to keep the mind sharp. Subjects with higher levels of 1,8-cineole were found to perform better in cognitive testing for speed and accuracy; they also reported more feelings of contentment. Anecdotal evidence supports the use of lemon, eucalyptus, cedarwood, bergamot, frankincense, and ylang-ylang essential oils for ADHD. They have been found to be effective in treatment of ADHD symptoms. Lemon and frankincense essential oils can improve concentration and cedarwood essential oil has a relaxing and sedative effect.

Cheaha D, Issuriya A, Manor R, et al., "Modification of sleep-waking and electroencephalogram induced by vetiver essential oil inhalation," Journal of Intercultural Ethnopharmacology*, 2016; 5(1): 72-78, doi: 10.5455/jice.20160208050736; Moss M, Oliver L, "Plasma 1,8-cineole correlates with cognitive performance following exposure to rosemary essential oil aroma,"* Therapeutic Advances in Psychopharmacology*, 2012; 2(3): 103-113, doi: 10.1177/2045125312436573.*

More Saffron Madness

In 2017, this column reported the efficacy of the herb saffron for depression. New research suggests the popular but expensive spice saffron (*Crocus sativus* L*)* is as effective as the stimulant methylphenidate (Ritalin) in treating symptoms in young people with attention deficit hyperactivity disorder (ADHD). Saffron has been used traditionally in the Middle East for various therapeutic purposes. Its active constituents seem to increase the reuptake inhibition of dopamine and norepinephrine and are GABA-α agonists. According to senior author Shahin Akhondzadeh, Ph.D., professor of clinical psychopharmacology at Roozbeh Psychiatric Hospital, Tehran University of Medical Sciences, "From this preliminary study, the main point is that we can consider saffron as an alternative [to stimulants] in patients with ADHD. Short-term efficacy of saffron demonstrated the same efficacy as methylphenidate, although larger, controlled studies with longer treatment periods are necessary to verify the findings." Ritalin, which is commonly used to treat ADHD, has side effects including loss of appetite, sleep disturbances, and nausea. Furthermore, approximately 30% of children do not respond to Ritalin, which has led a search for nonstimulant strategies.

Baziar S, Aqamolaei A, Khadem E, et al., "Crocus sativus L. Versus Methylphenidate in Treatment of Children with Attention-Deficit/Hyperactivity Disorder: A Randomized, Double-Blind Pilot Study,"

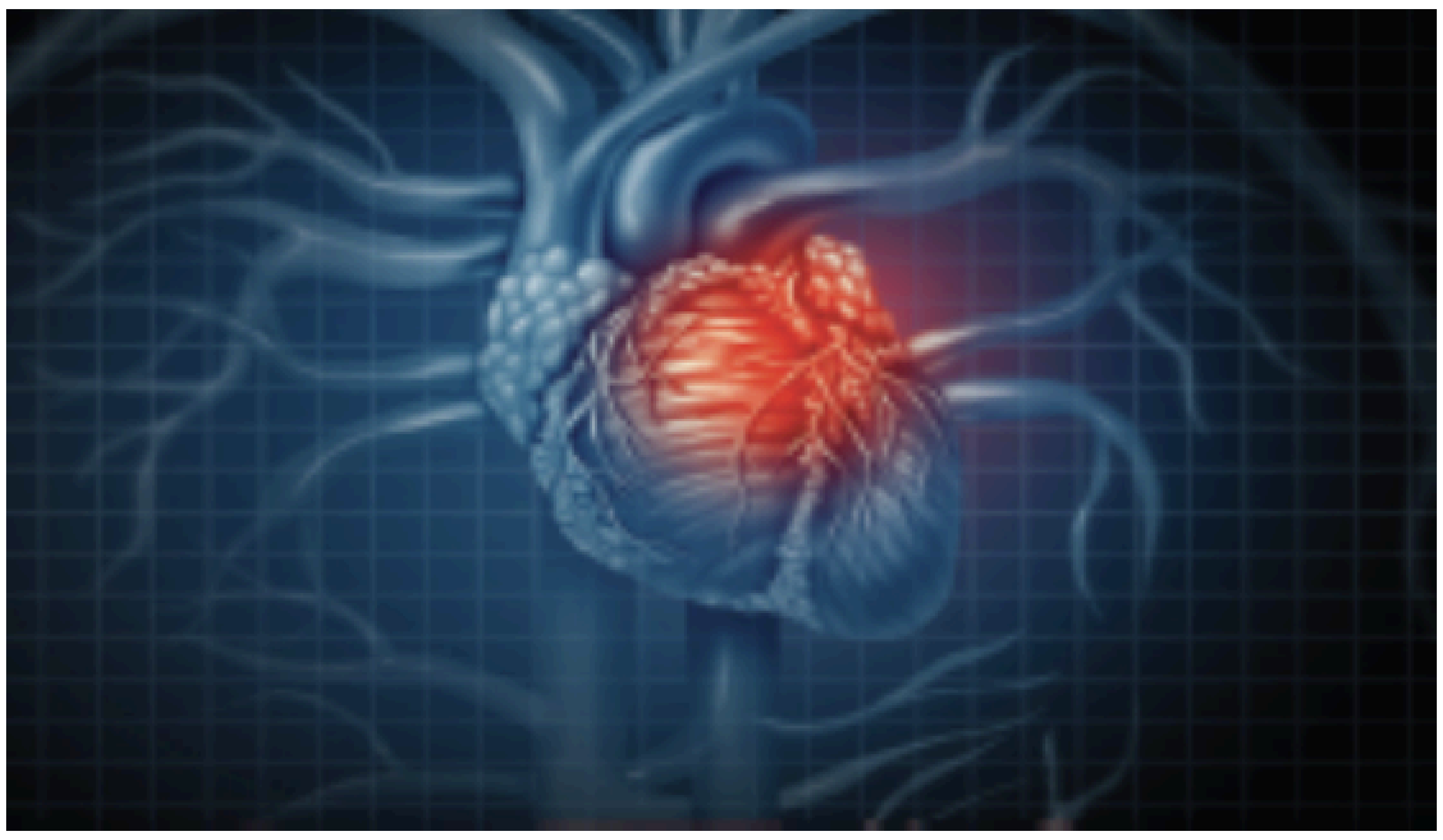
Health Bits & Pieces (HFN 37:1)

By Dan Kenner, Ph.D., LAc

Ketogenic Diet for Cancer?

The fact that many malignant tumors rely heavily on sugar to fuel their survival and growth has inspired hopes that ketogenic and other low-carbohydrate diets could reduce the risk for common cancers or interfere with metastasis. But there is now new evidence suggesting that ketogenic diets may actually promote certain kinds of cancer. An international team that included Chinese and American researchers examined the effects of the keto diet on a gene mutation called BRAF, known as the BRAF V600E mutation, which is found in some cancers. The BRAF V600E mutation occurs in more than 50% of all melanomas, 10% of colorectal cancers, 5% of multiple myelomas, and all hairy-cell leukemias. The research team found that a ketone produced in ketogenic diets called acetoacetate promotes the growth of melanomas and other tumors that carry the BRAF V600E mutation. It is still possible that ketogenic diets can prevent, slow, or arrest tumor growth in a substantial proportion of human cancers, but the success of some diets high in carbohydrates for cancer treatment, such as the Gerson Program, suggests that the jury is still out on a best cancer diet for all types of tumors.

Kang H, et al., "Metabolic Rewiring by Oncogenic BRAF V600E Links Ketogenesis Pathway to BRAF-MEK1 Signaling," Molecular Cell*, 2015 Aug 6;59(3):345-358; doi: 10.1016/j.molcel.2015.05.037; Epub 2015 Jul 2*
Xia S, et al., "Prevention of dietary-fat-fueled ketogenesis attenuates BRAF V600E tumor growth," Cell Metabolism*, 2017 Feb;25(2):358-73.*



Early Warning for Heart Attacks

Someone has a heart attack somewhere in the World every seven minutes. Until now there has been no method available for early detection of build-up of the arterial plaque that can trigger heart attacks and strokes. A team of researchers in Germany, along with researchers at the Cleveland Clinic, tested the "Fat Attenuation Index" (FAI) on over 3,900 subjects in a study that followed the participants for ten years after having computed tomography (CT) coronary angiograms.

It is difficult for doctors to know which plaques are most likely to cause life-threatening arterial blockages and determine which patients should be treated with more aggressive forms of therapies. The data from this study of the FAI technology, reported in *The Lancet*, was found to predict fatal heart attacks before they occurred with superior prognostic accuracy. Subjects with an abnormal FAI were estimated to have up to a 9-times higher risk of a fatal heart attack within five years. Using this technology, fatal heart attacks could be predicted years in advance by reading routine heart scans to pinpoint the population most at risk. According to the researchers, this new technology based on analysis of CT coronary angiograms will save lives.

Oikonomou EK, Marwan M, Desai, MK, et al., "Non-invasive detection of coronary inflammation using computed tomography and prediction of residual cardiovascular risk (the CRISP CT study): a post-hoc analysis of prospective outcome data," The Lancet, *Vol 392, No. 10151, pp. 929-939, September 15, 2018, at https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(18)31114-0/fulltext.*

Conflict of Interest

The New York Times reported that published studies in peer-reviewed medical journals are rife with conflict of interest. A study published in the *Journal of the American Medical Association* in August found that out of 100 doctors who received the most compensation from device makers in 2015, conflicts of interest were disclosed in only 37 percent of the articles published in the following year. *The New York Times* found that the journals often did not vet disclosures by researchers, although many relationships could have been easily detected on a Federal database, and gave confusing advice to authors. Flaws in the reporting system were identified nearly a decade ago by the Institute of Medicine. The failure to report their financial relationships with pharmaceutical and health care companies when their studies are published in medical journals is an ethical and medical crisis. The concern is that researchers' industry connections may increase the likelihood of, consciously or unconsciously, skewing results to favor the companies with whom they are associated. Fundamental changes in how conflicts of interest are reported were recommended but have not been implemented.

The problem of the influence of drug companies on medical research and consequently on medical practice has existed for decades, at least as far back as 1959 when there were Senate hearings on the issue. There were scandals involving the Dean of the medical school at Yale University and others involving medical clinics and organizations. Dr. Mehraneh Dorna Jafari, an assistant professor of surgery at the University of California, Irvine, School of Medicine, one of the authors of the study, stated that "The system is broken. The journals aren't checking and the rules are different for every single thing."

Ornstein C, Thomas K, "Top Doctors Aren't Disclosing Industry Ties in Medical Journal Studies," The New York Times, *December 10, 2018; Ziai K, Pigazzi A, et al., "Association of Compensation From the Surgical and Medical Device Industry to Physicians and Self-declared Conflict of Interest,"* Journal of the American Medical Association Surgery, *2018;153(11): 997-1002. doi:10.1001/jamasurg.2018.2576.*

Diet and Depression

Separate studies in different countries both reached the same conclusion with respect to the relationship between diet and mood regulation. Using as the standard the Alternative Healthy Eating Index (AHEI), which is based on foods and nutrients predictive of chronic disease risk, the studies have analyzed data about mental health, especially depression and dietary habits.

Researchers from the University of Paris published their analysis of data collected from 26,225 men and women aged 18-86 years who had completed diet surveys during a six-year prospective study. The French team compared the participants' self-reported diets to the Alternative Healthy Eating Index-2010 (AHEI-2010) and three other healthy eating plans. The results strongly linked the quality of the diet to the probability of developing symptoms of depression. They wrote, "Overall, these findings suggest that diets in accordance with national or international guidelines could have beneficial effects with regard to mental health."

In 2016, scientists from Canada and Iran also published a study that compared participants' self-reported diets to the AHEI-2010. They established that the 25% of participants whose diets scored the highest on the AHEI-2010 index were 49% less likely to develop anxiety and 45% less likely to develop depression when compared with the 25% scoring at the lower end of the scale. Adherence to a healthy diet brought even greater benefit to women and younger people (40 years old or younger).

Adjibade M, Lemogne C, Julia C, Hercberg S, Galan P, Assmann KE, Kesse-Guyot E, "Prospective association between adherence to dietary recommendations and incident depressive symptoms in the French NutriNet-Santé cohort," British Journal of Nutrition, *2018 Aug;120(3):290-300; doi: 10.1017/S0007114518000910; Epub 2018 May 23; Saneei P, Hajishafiee M, Keshteli A, Afshar H, Esmaillzadeh A, Adibi P, "Adherence to Alternative Healthy Eating Index in relation to depression and anxiety in Iranian adults,"* British Journal of Nutrition, *2016 Jul;116(2): 335-44; doi: 10.1017/S0007114516001926; Epub 2016 May 18.*

Do Supplements Improve Health?

Adjibade M, Lemogne C, Julia C, Hercberg S, Galan P, Assmann KE, Kesse-Guyot E, "Prospective association between adherence to dietary recommendations and incident depressive symptoms in the French NutriNet-Santé cohort," British Journal of Nutrition, *2018 Aug;120(3):290-300; doi: 10.1017/S0007114518000910; Epub 2018 May 23; Saneei P, Hajishafiee M, Keshteli A, Afshar H, Esmaillzadeh A, Adibi P, "Adherence to Alternative Healthy Eating Index in relation to depression and anxiety in Iranian adults,"* British Journal of Nutrition, *2016 Jul;116(2): 335-44; doi: 10.1017/S0007114516001926; Epub 2016 May 18.*

Do Supplements Improve Health?

Studies of the value of supplemental nutrition have produced contradictory conclusions. Some evidence reviews question the value of daily multivitamins, while others find definite benefits. One of the problems is that research studies on vitamins and other supplements are too short to show benefit and the longevity-promoting properties of many nutrients are not adequately considered. According to this argument, nutrition science overlooks the long-term needs of the body. Most vitamins and minerals are coenzymes for hundreds of different enzymatic reactions in the cells. Nutrients necessary for day-to-day health are also essential cofactors for enzymes required for functions like DNA repair, cardiovascular health, prevention of mitochondrial decay, and prevention of general oxidative stress.

According to a new review published in the *Proceedings of the National Academy of Sciences* as many as 70 percent of Americans are deficient in one or more of these key nutrients. According to research cited in the review, most American diets are deficient in vitamins and minerals that play roles in promoting longevity and in preventing chronic diseases such as heart disease, cancer, and even neurodegeneration. Some of the important longevity and disease-prevention factors are produced by probiotic intestinal flora. The article also presented a detailed survey of additional evidence published by other scientists. The author asserts that not only one's lifespan but one's "healthspan" can be prolonged by ingesting adequate quantities of 30 known vitamins and essential minerals. These nutrients, along with eleven additional substances not currently classified as vitamins, should be recognized as essential "longevity vitamins" because of their potential to extend a healthy life.

Ames B, "Prolonging healthy aging: Longevity vitamins and proteins," Proceedings of the National Academy of Sciences, *October 23, 2018 115 (43) 10836-10844; published ahead of print October 15, 2018, at https://doi.org/10.1073/pnas.1809045115; Ames B, "Optimal micronutrients delay mitochondrial decay and age-associated diseases,"* Mechanisms of Ageing and Development, *2010 Jul-Aug;131(7-8):473-9; doi: 10.1016/j.mad.2010.04.005; Epub 2010 Apr 24. Review; Ames B, "Prevention of mutation, cancer, and other age-associated diseases by optimizing micronutrient intake,"* Journal of Nucleic Acids, *2010 Sep 22;2010; pii: 725071; doi: 10.4061/2010/725071.*

Health Bits & Pieces (HFN 36:1)

Written by Dan Kenner, Ph.D., LAc.

Junk Food and Immunity

Fast food has a reputation for causing obesity and possibly bringing about adverse effects on heart, brain, and metabolic health. New research findings show that a junk-food diet can affect the immune system in a way that promotes inflammation. This could increase the risk of serious consequences from cardiovascular disease, dementia, and diabetes, to name a few possibilities. It is already established that poor diet can accelerate inflammation, but the new research indicates that the negative effects could go much deeper resulting in genetic reprogramming. In a study at the University of Bonn in Germany, rats given a high-fat, high-sugar junk-food diet immediately suffered increased inflammation as expected. This strong inflammatory response reprogrammed immune cells at the genetic level rendering them predisposed to developing inflammation with little provocation. Acute inflammation symptoms diminished when the rats returned to their normal grain-based diet, but the immune system reprogramming continued. The lead researcher of the study explained, "It has only recently been discovered that the innate immune system has a form of memory. After an infection, the body's defenses remain in a kind of alarm state, so that they can respond more quickly to a new attack." In other words, junk food can distort the protective mechanism of our immune system's memory and increase its reactivity.

Christ A, Günther P, Lauterbach M, et al., "Western Diet Triggers NLRP3-Dependent Innate Immune Reprogramming," Cell *2018;172(1-2):162-175.e14. doi: 10.1016/j.cell.2017.12.013. PubMed PMID: 29328911.*

Junk Food and Depression

A human study in Spain established a link between fast food and depression in adults. The study showed that diets high in commercial bakery items, sugary pastries made with white flour such as croissants and doughnuts, and junk food such as hamburgers, hot dogs, and pizza, lead to a higher risk of depression. The study, conducted by the University of Granada and University of Las Palmas de Gran Canaria, followed 9000 adult subjects, none of whom had ever taken an antidepressant drug or been diagnosed with depression. The subjects were evaluated according to whether they consumed a lot of fast food and were compared with people who ate very little fast food, and they were monitored for six months. People who were eating a relatively poor diet were 50% more likely to develop depression. And they found that the higher the level of fast-food consumption, the greater the risk of developing depression. The authors of the study wrote that "previous studies suggest that certain nutrients have a preventative role. These include B vitamins, omega-3 fatty acids, and [extra virgin] olive oil. Furthermore, a healthy diet such as that enjoyed in the Mediterranean has been linked to a lower risk of developing depression."

Sánchez-Villegas A, Toledo E, de Irala J, Ruiz-Canela M, Pla-Vidal J, Martínez-González MA, "Fast-food and commercial baked goods consumption and the risk of depression," Public Health Nutrition *2012;15(3):424-32. doi: 10.1017/S1368980011001856, Epub 2011 Aug 11, PubMed PMID: 21835082.*

International Study Affirms the Superiority of Milk from Grass-fed Cows

An international multi-centered study showed that milk from grass-fed cows provided twice as much omega-3 fat versus conventional milk, 52% less omega-6 fat than conventional milk, and 36% less omega-6 fat than organic milk. Prior research has shown that consuming organic beef or organic dairy products lowers omega-6 fat intakes, while raising intakes of omega-3 and conjugated linoleic acid (CLA) fats. Omega-3 fats lower inflammation, control cell growth, and improve blood circulation; but omega-6 fats trigger inflammation, stimulate cell growth, and coagulate blood. The American diet is too high in omega-6 fats, which in part come from meat and dairy products from animals who were fed large quantities of corn and soy. The study compared fats from grass-fed cows with a 100% diet of grass and silage, organic cows with 80% grass-based and 20% grains and concentrates and conventional cows fed 53% grass and 47% grains and concentrates. Over 90% of the milk consumed in America is from conventionally-fed cows. Analyses of 1,163 samples of whole "grass milk" from on-farm bulk tanks, prior to any processing, over a three-year period were carried out at an independent laboratory. One of the lead authors, Charles Benbrook of Johns Hopkins University, stated that "The near-perfect balance of omega-6 and omega-3 fatty acids in grass-milk dairy products will help consumers looking for simple, lifestyle options to reduce the risk of cardiovascular and other metabolic diseases."

Benbrook C, et al., "Enhancing the fatty acid profile of milk through forage-based rations, with nutrition modeling of diet outcomes," Food Science & Nutrition *(2018), doi: 10.1002/fsn3.610; Benbrook C, Butler G, Latif M, Leifert C, Davis D, "Organic production enhances milk nutritional quality by shifting fatty acid composition: a United States-wide, 18-month study,"* PLoS One *2013; 8(12):e82429, doi: 10.1371/journal.pone.0082429, eCollection 2013.*

Vitamin D for Cardiovascular Health

Vitamin D for Cardiovascular Health

The endothelium is the lining that encloses all 60,000 miles of your vascular system. The endothelium also regulates key aspects of cardiovascular health, including the secretion of nitric oxide, which in turn regulates vascular tone, inflammation, and clotting. Inflammation, stress, poor sleep, infection, and oxidative stress caused by a poor diet damage the endothelium. Vitamin deficiencies, especially Vitamins D and B12, can also have an adverse effect. When the endothelium is damaged, nitric-oxide secretion decreases, promoting atherosclerosis and high blood pressure. Longer-term nitric-oxide insufficiency can lead to diabetes, vascular accidents, and autoimmune diseases such as rheumatoid arthritis and Parkinson's disease. Results of research by scientists at Ohio University suggest that optimal levels of Vitamin D3 can enhance endothelial health and performance throughout your vascular system. They found that Vitamin D3 can even *reverse* damage caused by high blood pressure, diabetes, atherosclerosis and other disease conditions by facilitating the release of nitric oxide. Vitamin D3 is also a powerful antioxidant and significantly reduces free-radical damage from oxidative stress.

Direct treatment of blood vessels with Vitamin D3 restored the endothelium damaged by high blood pressure, atherosclerosis, and diabetes – effects that should reduce the risk of heart attacks, stroke, and other adverse cardiovascular events. Dr. Tadeusz Malinski, one of the co-authors of the study, said "There are not many, if any, known systems which can be used to restore cardiovascular endothelial cells which are already damaged, and vitamin D3 can do it. This is a very inexpensive solution to repair the cardiovascular system. We don't have to develop a new drug. We already have it."

Khan A, Dawoud H, Malinski T, "Nanomedical studies of the restoration of nitric oxide/peroxynitrite balance in dysfunctional endothelium by 1,25-dihydroxy vitamin D (3) - clinical implications for cardiovascular diseases," International Journal of Nanomedicine, *2018;13:455-466.*

The Best Diet for Weight Control

The Best Diet for Weight Control

The question has been debated now for years: Which diet is best for losing weight and keeping it off – low-carbohydrate or low-fat? New research suggests that the answer is that *quality* may be the most important factor rather than quantity or the proportion of fats and carbs.

Researchers at the Stanford University School of Medicine recruited 609 people between the ages of 18 and 50, about half men and half women, for a 12-month clinical study. Participants were instructed to: (1) avoid processed, nutrient-poor fare; (2) minimize added sugars, refined flours, and trans-fats; (3) choose fresh, whole, minimally processed, nutrient-dense foods, prepared at home whenever possible; and (4) maximize vegetable intake. The participants were also encouraged to follow official U.S. guidelines for physical activity. After 12 months, all of the participants enjoyed the same average weight loss: about 13 pounds, regardless of whether their diet was low-fat or low-carb.

The lead author of the study, Dr. Christopher Gardner, concluded that the simplest and best strategy for losing weight is to eat less sugar and refined flour, eat lots of vegetables, and favor whole foods in general. The study authors also concluded that "neither of the two hypothesized predisposing factors [genetic profiles or insulin-response profiles] was helpful in identifying which diet was better for whom."

Gardner C, Trepanowski J, Del Gobbo L, et al., "Effect of Low-Fat vs Low-Carbohydrate Diet on 12-Month Weight Loss in Overweight Adults and the Association With Genotype Pattern or Insulin Secretion: The DIETFITS Randomized Clinical Trial," Journal of the American Medical Association, *2018; 319(7):667-679, doi: 10.1001/jama.2018.0245; Stanford Medicine, "Low-fat or low-carb? It's a draw, Stanford study finds,"* EurekAlert!, *Feb 20, 2018, at https://www.eurekalert.org/pub_releases/2018-02/sm-lol021518.php/.*

Health Bits and Pieces (HFN 36:2) Summer 2018

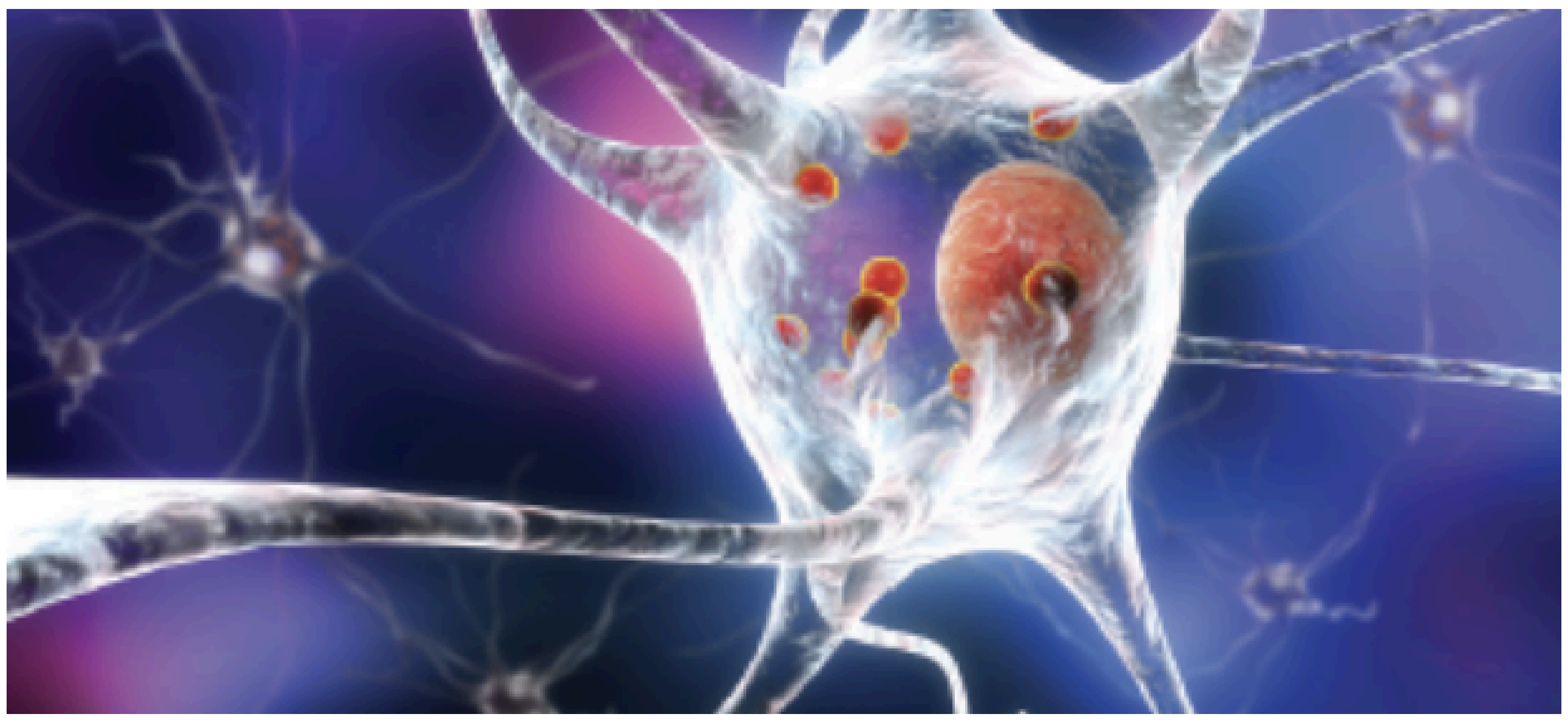
By Dan Kenner, Ph.D., LAc

Walnuts for Gut Health

After eating walnuts for three weeks, participants in a seven-week "crossover" clinical trial saw 49-160% higher levels of beneficial intestinal bacteria. After three weeks, one group returned to a normal diet and the other continued consuming walnuts every day. In the walnut group, the researchers measured improvements in a variety of health factors, including triglycerides, cholesterol (total, LDL, and HDL), inflammatory markers (IL-6 and C-reactive protein), and probiotic microbes. The three probiotic microbes that increased in number are known to reduce colon-cancer risk, inhibit inflammation, promote mucosal-cell repair, increase sodium and water absorption in the colon, and enhance intestinal motility. The researchers concluded, "These results suggest that the gastrointestinal microbiota may contribute to the underlying mechanisms of the beneficial health effects of walnut consumption." Other clinical research found that walnuts reduce cardiovascular risk factors.

Holscher H, Guetterman H, Swanson K, An R, et al., "Walnut Consumption Alters the Gastrointestinal Microbiota, Microbially Derived Secondary Bile Acids, and Health Markers in Healthy Adults: A Randomized Controlled Trial," Journal of Nutrition*, 2018 Jun 1;148(6):861-867. doi: 10.1093/jn/nxy004; Chiang Y, Haddad E, Rajaram S, Shavlik D, Sabaté J, "The effect of dietary walnuts compared to fatty fish on eicosanoids, cytokines, soluble endothelial adhesion molecules and lymphocyte subsets: a randomized, controlled crossover trial,"* Prostaglandins, Leukotrienes and Essential Fatty Acids, *2012 Oct-Nov; 87(4-5):111-7. doi: 10.1016/j.plefa.2012.07.007, Epub 2012 Sep 5.*

Preventing Parkinson's



An important feature of Parkinson's disease is the accumulation of a protein in the brain called alpha-synuclein, which is sometimes called the "Parkinson's protein." Swedish researchers found that a substance in several commonly eaten ocean fish that binds alpha-synuclein. This substance, parvalbumin, is found in many types of fish, but is especially abundant in cod, wild salmon, and herring. Pernilla Wittung-Stafshede, the lead author of the study, explains, "Parvalbumin collects up the 'Parkinson's protein' and actually prevents it from aggregating, simply by aggregating itself first."

Werner T, Kumar R, Horvath I, Scheers N, Wittung-Stafshede P, "Abundant fish protein inhibits α-synuclein amyloid formation," Scientific Reports, *2018 Apr 3; 8(1):5465. doi: 10.1038/s41598-018-23850-0.*

Mercury in Fish

Fish consumption has been associated with reduced risk of cardiovascular disease especially heart attacks and strokes. Fish is the major source of long-chain omega-3 fatty acids. On the other hand, fish is also a major source of methylmercury, which is associated with increased risk of cardiovascular disease. It has been thought that high exposure to mercury could reduce the benefits of long-chain omega-3 fatty acids.

Researchers from Harvard and Spain, though, reported that people at high risk for heart disease who also eat a lot of fish do not have a higher cardiovascular risk due to mercury. This is because, it was suggested, the amount of selenium exceeds the amount of mercury in almost all ocean fish. This is important since mercury binds with selenium in our bodies, making it unavailable. Selenium is a critical factor in immunity as a catalyst for vital antioxidant enzymes. Fish rich in long-chain omega-3 fatty acids include wild salmon, herring, anchovies, sardines, and mackerel.

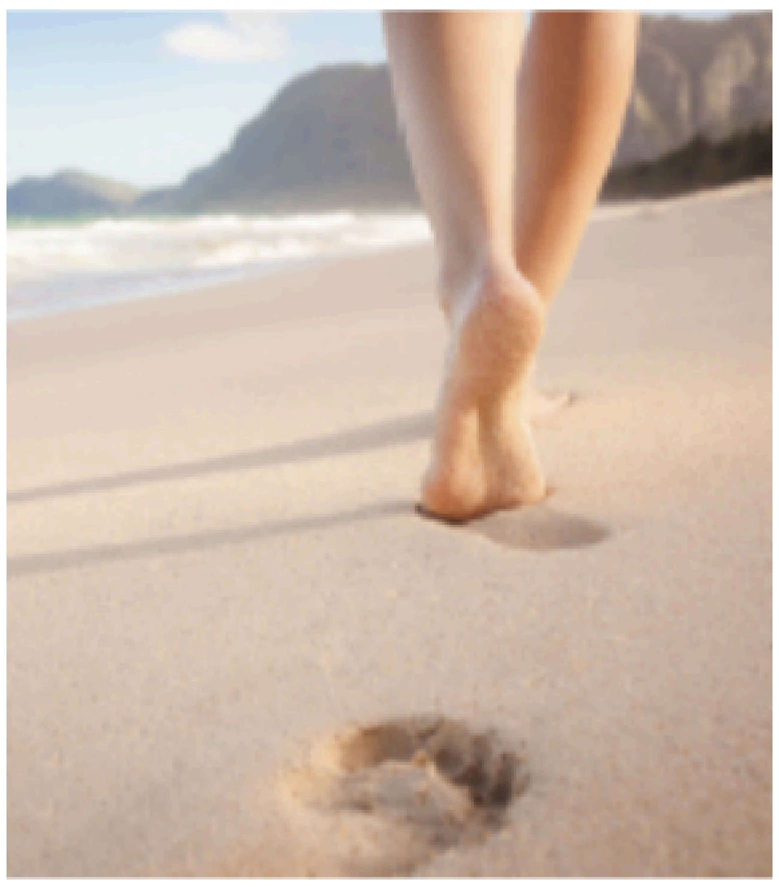
Downer M, Martínez-González M, Gea A, et al., "PREDIMED Study Investigators. Mercury exposure and risk of cardiovascular disease: a nested case-control study in the PREDIMED (PREvention with MEDiterranean Diet) study," BMC Cardiovascular Disorders, *2017 Jan 5; 17(1):9. doi: 10.1186/s12872-016-0435-8.*

Vitamin D and Colon Cancer

A new review of evidence is the largest ever published on the relationship between colon cancer and Vitamin D. Colorectal cancer is the second-biggest cause of cancer death in the United States, behind lung cancer. Researchers at the American Cancer Society, the National Institutes of Health, Emory University, Harvard Medical School, Boston University, Johns Hopkins University, and Italian cancer research centers examined 17 published epidemiological studies involving over 12,000 people. People with colorectal cancer were matched demographically with people free of the disease and compared. The international research team found numerous statistical links between the risk of colorectal cancer and Vitamin-D blood levels. Their analysis strongly suggests that higher blood Vitamin-D levels reduce the risk of colorectal cancer.

McCullough M, et al., "Circulating Vitamin D and Colorectal Cancer Risk: An International Pooling Project of 17 Cohorts," JNCI: Journal of the National Cancer Institute, *djy087. June 14, 2018, accessed at https://doi.org/10.1093/jnci/djy087.*

Grounding



Grounding is the method of connecting your body to the ground's natural electrical field. This appears to change the electrical balance in ways that may benefit our bodies and minds. It is also called earthing and can be accomplished simply by going barefoot or sitting or lying on the ground. Advocates of the practice claim that free electrons flow into the body when it comes in direct contact with the ground. This neutralizes positively charged substances such as acidic waste products and free radicals that can promote inflammation.

Two researchers – James Oschman, Ph.D. and Gaétan Chevalier, the latter a cell biologist from U.C. Irvine – found that that grounding reduces pain from inflammation and measurably reduces circulating levels of inflammatory markers. They also performed a small clinical study on blood viscosity with well-known nutritional cardiologist Stephen T. Sinatra, M.D. High blood viscosity is a warning sign of several cardiovascular diseases. They found that the participants had significantly reduced red-blood-cell aggregation after only two hours of being grounded. Chevalier's team concluded that "Grounding increases the surface charge on RBCs [red blood cells] and thereby reduces blood viscosity and clumping. Grounding appears to be one of the simplest and yet most profound interventions for helping reduce cardiovascular risk and cardiovascular events."

Oschman J, et al., "The effects of grounding (earthing) on inflammation, the immune response, wound healing, and prevention and treatment of chronic inflammatory and autoimmune diseases," Journal of Inflammation Research, *2015; 8:83-96; Chevalier G, et al., "Earthing (grounding) the human body reduces blood viscosity-a major factor in cardiovascular disease,"* Journal of Alternative and Complementary Medicine, *2013 Feb; 19(2):102-10.*

Tai chi and Qigong

Grounding is the method of connecting your body to the ground’s natural electrical field. This appears to change the electrical balance in ways that may benefit our bodies and minds. It is also called earthing and can be accomplished simply by going barefoot or sitting or lying on the ground. Advocates of the practice claim that free electrons flow into the body when it comes in direct contact with the ground. This neutralizes positively charged substances such as acidic waste products and free radicals that can promote inflammation.

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Tai chi and Qigong

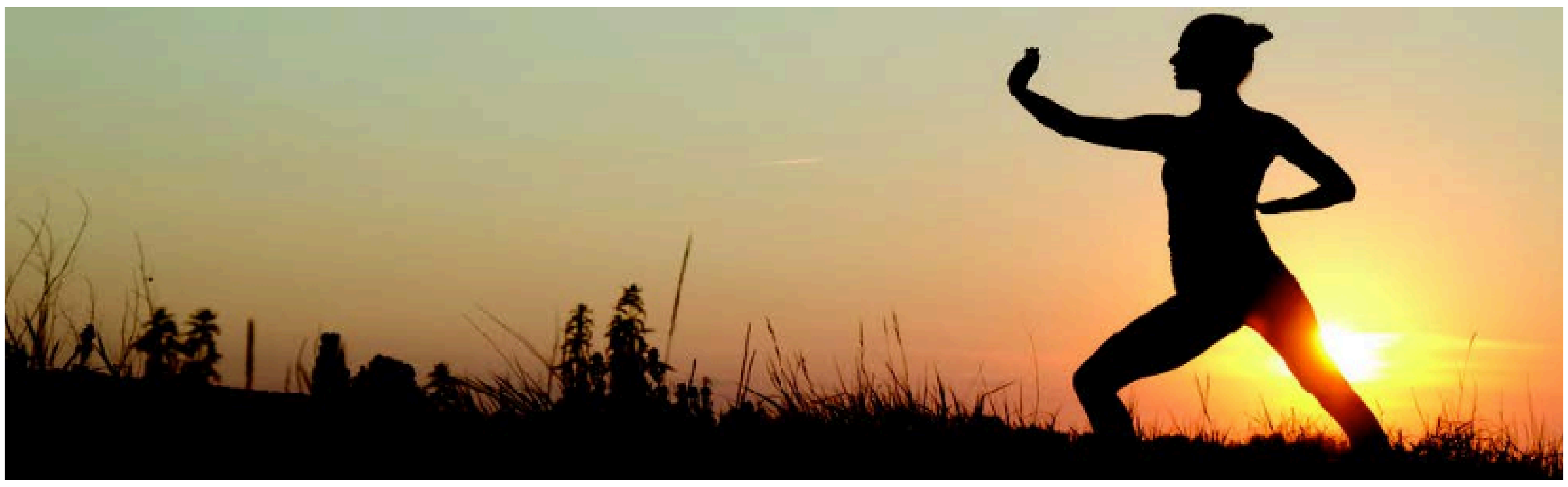
A growing body of research is emerging for Qigong, an ancient traditional Chinese wellness practice with a similar theoretical orientation to Tai Chi. Qigong and Tai Chi, along with Yoga and Pranayama from India, have been categorized as a type of exercise referred to currently as “meditative movement.” Qigong and Tai Chi are close relatives having shared historical roots, common components in their execution, and considered to have wellness and health-promoting properties as a part of traditional Chinese medicine. There is evidence of benefits for bone health, cardiovascular protection, immunity-boosting, and improvement of general quality of life. It is incorporated as a component of treatment protocols for chronic pain, cancer, heart disease, and depression.

Jahnke R, Larkey L, Rogers C, Etnier J, Lin F, “A Comprehensive Review of Health Benefits of Qigong and Tai Chi,” American Journal of Health Promotion*, 2010 JUL-AUG; 24(6): e1–e25, doi: 10.4278/ajhp.081013-LIT-248; Cheng T, “Tai chi: The Chinese ancient wisdom of an ideal exercise for cardiac patients,”* International Journal of Cardiology*, 2006;117:293-295; Lee M, Chen K, Sancier K, Ernst E, “Qigong for cancer treatment: A systematic review of controlled clinical trials,”* Acta Oncologica*, 2007;46:717-22; Oh B, Butow P, Mullan B, et al., “Impact of Medical Qigong on quality of life, fatigue, mood and inflammation in cancer patients: a randomized controlled trial,” Annals of Oncology, 2010; 21: 608-614, doi: doi.org/10.1093/annonc/mdp479 (full text).*

Health Bits & Pieces (HFN 36:4)

By Dan Kenner

Tai Chi and Fibromyalgia



Fibromyalgia is a chronic disorder characterized by widespread musculoskeletal pain, fatigue, and tenderness located in specific areas. Aerobic exercise is the most commonly prescribed non-drug treatment for fibromyalgia; but tai chi, the Chinese discipline of mindful movement, appears as effective as or even better than aerobic exercise for managing fibromyalgia pain. Results of a 52-week single-blind trial showed that in addition to fibromyalgia symptom relief, tai chi was associated with greater improvements in depression, anxiety, self-efficacy, and quality-of-life. The research study showed that the longer the subjects practiced tai chi, the greater the benefits. Therapeutic benefits among three instructors in a large sample of diverse patients with fibromyalgia were consistent. The investigators wrote, “Compared with aerobic exercise, the most commonly prescribed non-drug treatment, tai chi, appears as effective as or better for managing fibromyalgia.” Chenchen Wang, M.D., Tufts University School of Medicine in Boston, Massachusetts and lead researcher at one of the research centers, wrote, "This mind-body approach may be considered a therapeutic option in the multidisciplinary management of fibromyalgia."

Wang C, Schmid C, Fiekding R, et al., “Effect of tai chi versus aerobic exercise for fibromyalgia: comparative effectiveness randomized controlled trial,” British Medical Journal *2018; 360.k851; doi: https://doi.org/10.1136/bmj.k851 (Published 21 March 2018).*

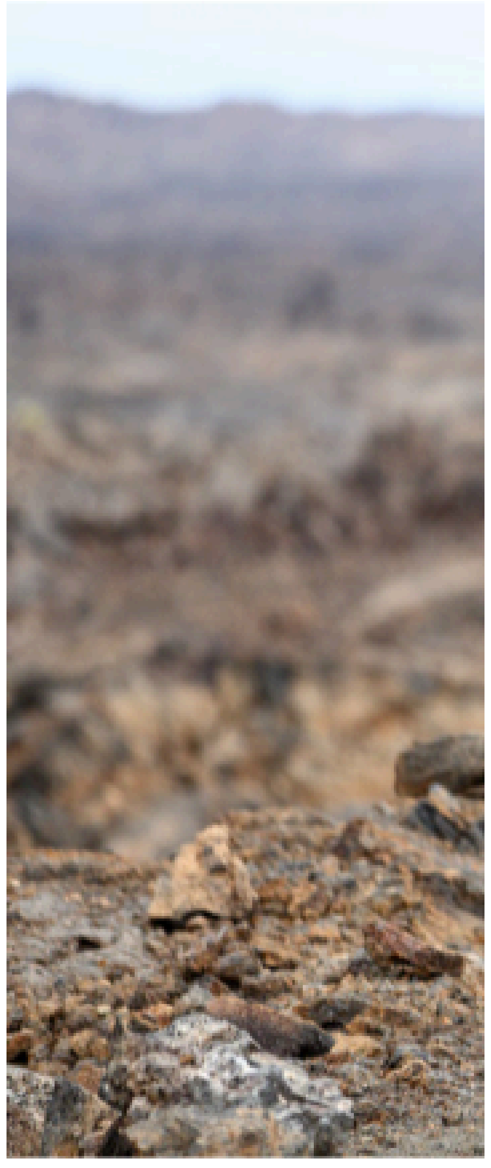
Diabetes Diet Cure

People with a diagnosis of diabetes are always instructed in dietary reform by medical providers. But the idea that diet could change the course of the disease or reverse it is not commonly recognized. Most people feel they face an incurable, progressive disease that they will suffer for the rest of their lives. Recent studies suggest that Type-2 diabetes can actually be reversed through strictly following certain dietary protocols. Researchers for DiRECT, the Diabetes Remission Clinical Trial, reported the data from 298 people diagnosed with Type-2 diabetes within the past 6 years who are not insulin-dependent. One-half of the patients were randomized to be treated under current best practice guidelines and the other half underwent an intensive weight-management program that required them to commit to 3-5 months of a low-calorie liquid diet of 850 total daily calories. Foods were gradually reintroduced over the subsequent weeks. After 1 year, 24% of participants in the low-calorie diet group experienced weight loss of at least 33 lbs. and 46% experienced remission of diabetes, compared with 4% in the control group.

This study was followed by another study of 349 patients diagnosed with Type-2 diabetes. A cohort of 87 patients received conventional care and was compared to a group on a low-carbohydrate diet (262 patients) accompanied by continuous care that included Web-based consultation with a health coach and medical provider. The result was that insulin therapy was reduced or eliminated in 94% of users and no adverse events were reported.

Lean M, Leslie W, Barnes A, et al., "Primary care-led weight management for remission of type 2 diabetes (DiRECT): an open-label, cluster-randomised trial," Lancet, *2018; 391(10120): 541-551 (ISSN: 1474-547X); Hallberg S, McKenzie A, Williams P, et al., "Effectiveness and Safety of a Novel Care Model for the Management of Type 2 Diabetes at 1 Year: An Open-Label, Non-Randomized, Controlled Study,"* Diabetes Therapy, *2018 9(2):583-612 (ISSN: 1869-6953)*

Exercise Your Right to a Healthy Gut



There is new clinical evidence that exercise can boost friendly bacteria. Studies in test animals have shown that exercise improves gut-microbe profiles, but several recent studies support the idea that exercise enhances health in humans by enhancing the gut microbiome.

A recently published Chinese trial showed that long-distance running yields immediate metabolic changes that can potentially impact a person's gut microbiota within several hours. Long-distance runners were tested before and after a half-marathon (13 miles). The runners provided fecal samples, each volunteer's body mass index (BMI) was measured, and each volunteer was given the same kind of food. Levels of 40 microbial metabolites had changed significantly, and the levels of certain microbes considered generally beneficial were significantly different. The Chinese authors wrote, "Our data indicated that long-distance endurance running can immediately cause striking metabolic changes in the gut environment. These findings highlighted the health-promoting benefits of exercise from the perspective of GM [gut microbiota]."

In a Finnish study, 17 overweight, relatively sedentary women were recruited for a six-week trial during which they participated in three stationary bike exercise sessions per week. The women's gut microbes were tested before and after to determine the levels of two major families of beneficial microbes. After six weeks of bicycle training, levels of pro-inflammatory Proteobacteria dropped and there was an increase in the population of Akkermansia, which appear to boost metabolism and prevent obesity and diabetes.

Munukka E, Ahtiainen J, Puigbó P, et al., "Six-Week Endurance Exercise Alters Gut Metagenome That Is Not Reflected in Systemic Metabolism in Overweight Women," Frontiers in Microbiology, *2018 9:2323 (Published 2018 Oct 3) doi:10.3389/fmicb.2018.02323; Zhao X, Zhang Z, Hu B, Huang W, Yuan C, Zou L, "Response of Gut Microbiota to Metabolite Changes Induced by Endurance Exercise,"* Frontiers in Microbiology, *2018 Apr 20, 9:765, doi: 10.3389/ fmicb.2018.00765, eCollection 2018.*

Organic Foods Linked to Lower Cancer Risk

A seven-year epidemiological survey in France was carried out with over 68,000 volunteers who answered detailed questions about how often they consumed more than 20 different types of organically-produced food, including fruits, vegetables, dairy foods, soy foods, meat, fish, eggs, grains, legumes (e.g., beans), bread, cereals, flour, oils, and more. The researchers, from the Sorbonne University, reviewed the health records of the volunteers at the beginning and end of the study, which ended on November 30, 2016. The French team found that the people who reported eating organic foods the most frequently had 25% fewer cancers, including lymphoma-type cancers and had a significantly lower rate of postmenopausal breast cancers compared to those who never ate organic foods.

In invited commentary published in the *Journal of the American Medical Association* (*JAMA*), Harvard researchers criticized the research because the researchers did not test the volunteers' pesticide levels, which probably would have made the study prohibitively expensive. They also expressed the belief that self-reporting is unreliable in research. The research is compelling however, and if the benefits of predominantly organic diets can be proven beyond doubt, it will provide important incentives for both producers and consumers of organic foods.

Baudry J, et al., "Association of Frequency of Organic Food Consumption With Cancer Risk: Findings From the NutriNet-Santé Prospective Cohort Study," JAMA Internal Medicine, *Published online October 22, 2018, doi:10.1001/jamainternmed.2018.4357; Hemler E, Chavarro J, Hu F, "Organic Foods for Cancer Prevention—Worth the Investment?"* JAMA Internal Medicine, *Published online October 22, 2018, doi:10.1001/jamainternmed.2018.4363*

Not Pinterested

At a time when social media are under fire for alleged lack of neutrality, Pinterest has displayed a shocking bias against responsible freedom of speech. Pinterest censored information on vaccine safety that appeared on the evidence-based CAM information website www.greenmedinfo.com. Pinterest claimed that their "policy doesn't allow Pinners to save content from websites that promote advice where there may be immediate or detrimental effects on a Pinner's health or on public safety." According to GreenMedInfo Founder Sayer Ji, "platforms like Pinterest have an agenda to censor information on the topic of vaccines, and literally thousands of natural alternatives, that is opposed to their political agenda even if that information comes from high gravitas, academic sources which is supposed to be the top of the Evidence-Based Medicine pyramid of credibility."

Sayer Ji, "Pinterest Bans GreenMedInfo for Posting Natural Health & Vaccine Safety Info," GreenMedInfo, *Dec. 16, 2018, at http://www.greenmedinfo.com/blog/pinterest-bans-greenmedinfo-posting-natural-health-vaccine-safety-info.*

Health Bits and Pieces (HFN 36:3)

Written by Dan Kenner, Ph.D., LAc

Fitness and Heart Repair

It's well-established that an overly sedentary lifestyle increases the risk of cardiovascular problems. Many of us lack the motivation to go jogging or go to the gym or pool to engage in aerobic exercises like running or swimming. But new research shows that significant health benefits can be achieved without devoting hours to running, biking, or getting to and from a gym. A multi-center study with participating scientists from Texas, Colorado, and Australia reported that it is possible to reverse damage to the heart caused by a sedentary lifestyle, that is, rigidity and atrophy of the heart muscle, with just two years of regular aerobic exercise. Middle-aged men in an exercise group in a research study worked up to a series of high-intensity interval training sessions known as four-by-fours. These training sessions included four sets of exercise lasting four minutes each during which they reached 95 percent of their maximum heart rate at least four days a week. Each four-minute exercise set was followed by three minutes of "active recovery" during which they reached 60 to 70 percent of their peak heart rate. This group was compared with a control group who performed balance training, weight training, and yoga three times a week. After two years, the exercise group enjoyed significant improvements in both cardiac muscle flexibility and efficiency of oxygen utilization, while the control group saw no improvement. Study leader Benjamin D. Levine, M.D. said that "We found what we believe to be the optimal dose of the right kind of exercise, which is four to five times a week, and the 'sweet spot' in time, when the heart risk from a lifetime of sedentary behavior can be improved."

Howden E, Sarma S, Lawley J, Opondo M, Cornwell W, Stoller D, Urey M, Adams-Huet B, Levine B, "Reversing the Cardiac Effects of Sedentary Aging in Middle Age-A Randomized Controlled Trial: Implications For Heart Failure Prevention," Circulation, *2018 Apr 10;137(15):1549-1560. doi: 10.1161/CIRCULATIONAHA.117.030617. Epub 2018 Jan 8. PubMed PMID: 29311053; PubMed Central PMCID: PMC5893372.*

Farmed Salmon

There are numerous problems with salmon farming. The grey flesh has to be dyed red so that consumers will buy it; but there are other problems including sea lice, chemical contamination, and reduction of omega-3 fatty acids, which are the missing nutrients in the American diet that have made fish oil popular. Average omega-3 levels in farmed salmon dropped by half between 2005 and 2016.

Douglas Tocher of Stirling University in Scotland explained why: “About five years ago, a 130 gram (4.6 ounce) portion of Atlantic salmon was able to deliver 3,500 mg of beneficial omega-3. Now, the level of omega-3 has halved.” This is because changes in the type of feed used to raise the fish include adding corn, soy and canola oil, all cheap and often genetically modified, and rich in omega-6 fatty acids. Animal by-products like poultry feathers, necks, and intestines are also fed to farmed fish. The proportion of small fish, the natural diet, in the feed has dropped to 20% or below. Salmon farmers also feed their fish a pesticide called Slice® (emamectin benzoate) to control sea lice. Sea lice attach to fish to eat their blood and skin. Farmed salmon are in more crowded conditions than wild salmon, so wild salmon populations rarely suffer from dangerous concentrations of sea lice. According to the FDA, Slice® should not be used on fish destined for dinner plates, and it can kill or cripple shellfish on the seafloor below salmon pens.

Henriques J, Dick J, Tocher D, Bell J, “Nutritional quality of salmon products available from major retailers in the UK: content and composition of n-3 long-chain PUFA,” British Journal of Nutrition*, 2014 Sep 28;112(6):964-75. doi: 10.1017/S0007114514001603. Epub 2014 Jul 14; Sprague M, Dick J, Tocher R, “Impact of sustainable feeds on omega-3 long-chain fatty acid levels in farmed Atlantic salmon 2006-2015,”* Scientific Reports*, 2016 Feb 22;6:21892. doi: 10.1038/srep21892; Sprague M, Walton J, Campbell P, Strachan F, Dick J, Bell J, “Replacement of fish oil with a DHA-rich algal meal derived from Schizochytrium sp. on the fatty acid and persistent organic pollutant levels in diets and flesh of Atlantic salmon (Salmo salar, L.) post-smolts,”* Food Chemistry*, 2015 Oct 15;185:413-21. doi: 10.1016/j.foodchem.2015.03.150. Epub 2015 Apr 10.*

Magnesium and Vitamin D

Insufficient magnesium in our tissues can increase calcium and phosphate levels, which can lead to risky calcification of artery walls. It is well known that magnesium is necessary for transport of calcium in the body and magnesium insufficiency can result in depositing calcium in tissues, such as the arteries or the lenses of the eyes. New evidence shows that adequate dietary magnesium is also necessary to effectively use the Vitamin D we get from UV sunrays, fatty fish, fortified foods, and supplements. Vitamin D is essential for healthy bones and is also a key element in “innate” immunity, our first line of defense against infection. Low levels of Vitamin D have been linked to a higher risk for breast cancer, colon cancer, prostate cancer, heart disease, autoimmune disorders, depression, and obesity (and tuberculosis). The authors of a new evidence review conclude that our bodies cannot metabolize Vitamin D efficiently without sufficient levels of magnesium. Mohammed Razzaque, a co-author of the study explained, "People are taking vitamin D supplements but don't realize how it gets metabolized. Without magnesium, vitamin D is not really useful or safe. By consuming an optimal amount of magnesium, one may be able to lower the risks of vitamin D deficiency and reduce dependency on vitamin D supplements." Almost 50% of Americans don't get the recommended daily allowance of magnesium, which is 400 mg per day. If magnesium is deficient, a lot of the Vitamin D is inactive and unavailable for use. Good sources of magnesium include nuts, seeds, leafy greens, whole grains, fish, and most foods high in fiber. Excessive sugar and alcohol consumption as well as stress can leach magnesium out of the body.

Uwitonze A, Razzaque M, "Role of Magnesium in Vitamin D Activation and Function," Journal of the American Osteopathic Association, *2018 Mar 1;118(3):181-189. doi: 10.7556/jaoa.2018.037. PubMed PMID: 29480918; Budhathoki S, et al., "Plasma 25-hydroxyvitamin D concentration and subsequent risk of total and site specific cancers in Japanese population: large case-cohort study within Japan Public Health Center-based Prospective Study cohort,"* British Medical Journal, *2018 Mar 7;360:k671. doi: 10.1136/bmj.k671. PubMed PMID: 29514781; PubMed Central PMCID: PMC5838719; Henninger N, "Low vitamin D predicts more severe strokes, poor health post-stroke,"* American Stroke Association Meeting Report Abstract W MP62, *11 Feb 2015; Rosanoff A, Weaver C, Rude R, "Suboptimal magnesium status in the United States: are the health consequences underestimated?"* Nutrition Reviews, *2012 Mar;70(3):153-64. doi: 10.1111/j.1753-4887.2011.00465.x. Epub 2012 Feb 15.*

Delaying Menopause with Diet

In the United States, the average age of menopause for white women is 51.5 years. It is earlier for Hispanic and African-American women and slightly later for East Asian women. Early menopause is associated with various health risks such as heart disease, vascular accident, diabetes, osteoporosis, and chronic fatigue syndrome. The age of menopause is considered to be influenced by a woman's age at first menstruation, number of pregnancies, and whether she breast-fed or used hormonal birth control. But the primary factors that determine a woman's age at menopause are her mother's age at menopause and smoking, which speeds the onset of menopause.

Now it appears that diet may play a role. New study findings suggest that food choices may help delay menopause. A study in the U.K. surveyed 35,372 women from England, Scotland, and Wales, aged 35 to 69, with respect to their diet habits while also factoring in their weight, physical activity, reproductive history, menopausal status, and use of hormone replacement therapy. Studies in China and Japan also confirmed that daily portions of refined carbohydrates, especially rice and pasta, accelerated the onset of menopause by about 1.5 years while portions of fatty fish, such as sardines or salmon delayed menopause by about 3 years. Additionally, daily portions of legumes delayed menopause by about 1.5 years. Eating meat delayed menopause by almost a year compared with women who ate a vegetarian diet. Supplementing with zinc and Vitamin B6 were also found to delay menopause.

Dunneram Y, Greenwood D, Burley V, Cade J, "Dietary intake and age at natural menopause: results from the UK Women's Cohort Study," Journal of Epidemiology and Community Health, *2018 Apr 30. pii: jech-2017-209887. doi: 10.1136/jech-2017-209887. [Epub ahead of print]; Dorjgochoo T, Kallianpur A, Gao Y, Cai H, Yang G, Li H, Zheng W, Shu X, "Dietary and lifestyle predictors of age at natural menopause and reproductive span in the Shanghai Women's Health Study,"* Menopause, *2008 Sep-Oct;15(5):924-33. doi: 10.1097/gme.0b013e3181786adc; Nagata C, Takatsuka N, Kawakami N, Shimizu H, "Association of diet with the onset of menopause in Japanese women,"* American Journal of Epidemiology, *2000 Nov 1;152(9):863-7.*

Fats from Bacteria, Not Food, Drive Heart Disease

Arterial plaque deposits can narrow arteries, or break loose and completely block them, leading to a heart attack or a stroke. Now there is evidence that there are "alien" fats in arterial plaque produced by pathogenic bacteria that trigger an immune response that results in local inflammation. The new research is another link between gum disease and arterial damage. It also might help explain why research has not shown any specific connection with dietary fat intake and arterial plaque buildup. University of Connecticut researchers analyzed arterial fatty deposits and found fats with a chemical signature unlike those produced by humans or other mammals. These foreign fats come from bacteria (Bacterioidetes and Porphyromonas) that are typically found in the mouth. These bacteria don't normally infect blood vessels but the fats they produce easily seep through cell walls and into the bloodstream. The immune system reacts to their presence as if they were an infection, resulting in arterial inflammation and further plaque buildup.

Nemati R, Dietz C, Anstadt E, Cervantes J, Liu Y, et al., "Deposition and hydrolysis of serine dipeptide lipids of Bacteroidetes bacteria in human arteries: relationship to atherosclerosis," Journal of Lipid Research, *2017 Oct; 58(10):1999-2007. doi: 10.1194/jlr.M077792. Epub 2017 Aug 16; Teles R, Wang C, "Mechanisms involved in the association between periodontal diseases and cardiovascular disease,"* Oral Diseases, *2011 Jul;17(5):450-61. doi: 10.1111/j.1601-0825.2010.01784.x. Epub 2011 Jan 11; Siemelink M, van der Laan S, van Setten J, de Vries J, et al., "Common variants associated with blood lipid levels do not affect carotid plaque composition,"* Atherosclerosis, *2015 Sep;242(1):351-6. doi: 10.1016/j.atherosclerosis.2015.07.041. Epub 2015 Jul 26.*

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Health Bits & Pieces (Spring 2020)

May 22, 2020 — Leave a Comment

Health Bits & Pieces (HFN 38:1)

By Dan Kenner

For Dietary Supplement Skeptics

One of the World's most published and respected biochemists, Dr. Bruce Ames, contends that most American diets are deficient in micronutrients that promote longevity and curb the risk of chronic conditions, such as heart disease and cancer. Based on more than ten years of research in his laboratory at Children's Hospital Oakland Research Institute (affiliated with the University of California, San Francisco), Ames notes that even minor vitamin deficiencies could impact long-term health. Dr. Ames asserts that a person's "health span" can be extended by consuming optimal levels of 30 essential vitamins and minerals. These nutrients, along with 11 others not currently considered essential, comprise a set of "longevity vitamins" that can extend healthy aging. Dr. Ames has published more than 500 scientific papers over almost seven decades, and considers this his most important work. "This may be a theoretical paper, but I hope it can add a few years to everyone's lives."

Ames B, "Prolonging healthy aging: Longevity vitamins and proteins," Proceedings of the National Academy of Sciences of the USA*, 2018; 115(43):10836-10844, doi: 10.1073/pnas.1809045115, Epub 2018 Oct 15.*

News from China

Medical historians have speculated that the use of Chinese herbs may be the reason why the Chinese did not suffer from the great pandemics that swept across Europe, like the Black Plague. Today, Traditional Chinese Medicine (TCM) appears to be effective in treating COVID-19 infections in Chinese hospitals. As of February 5th, 214 confirmed cases of coronavirus infection in four provinces were treated with the TCM decoction *Qingfei Paidutang* ("Cleanse-lung-discharge-toxin") Decoction. The total effective rate was more than 90%. Over 60% of the patients showed significant improvement in symptoms and radiographic findings; over 30% of the patients had stable symptoms and no exacerbation. Another source reported that *Qingfei Paidutang* has been used in treating 701 confirmed cases in ten provinces, of which 130 patients have been cured and discharged. Li Yu, an official with the National Administration of TCM, reported that symptoms disappeared in 51 cases and improved in 268, with another 212 remaining in stable condition. Li added that the herbal decoction was recommended to medical institutions nationwide on February 6th after data analysis of 214 cases. Detailed clinical records showed that fever was reduced to normal in 94.6% of the patients, and 80.6% of 214 patients stopped coughing after using the decoction for six days.

http://finance.jrj.com.cn/2020/02/07073028790484.shtml; http://www.xinhuanet.com/english/2020-02/17/c_138792163.htm; https://www.tellerreport.com/news/2020-02-29—expert–qingfei-paidu-decoction-is-very-effective-.BJjwxjPE8.html

Essential Oils for Viral Infection

Essential Oils for Viral Infection

More than 25 essential oils are official medicaments in the European Pharmacopoeia. Among them, essential oils of anise, bitter fennel fruit, eucalyptus, peppermint, tea tree, and thyme are frequently used for the treatment of respiratory tract diseases. Common chemical constituents of essential oils, including menthol and 1,8-cineole, have been extensively used in human experiments. Menthol has been shown to be antitussive in low concentration, and reduces respiratory discomfort and dyspnea. The monoterpene 1,8-cineole, also known as eucalyptol, is antimicrobial, antitussive, mucolytic, anti-inflammatory, a bronchodilator, and promotes ciliary transport. It is useful for treating a wide range of respiratory conditions. Its anti-inflammatory property makes it useful not only in respiratory infections but inflammatory diseases like bronchial asthma and COPD. It is found in numerous essential oils including eucalyptus, helichrysum, laurel, niaouli, ravintsara, rosemary, and others. Another potentially useful phytochemical is germacrone, a major component of the essential oil extracted from turmeric. It was found to inhibit influenza-virus replication with antiviral activity against the H1N1 and H3N2 influenza A viruses and the influenza B virus.

European Pharmacopoeia Commission, European Pharmacopoeia (Ph. Eur.) 10th Edition *(2007), Council of Europe, Strasbourg; Setzer W, "Essential oils as complementary and alternative medicines for the treatment of influenza,"* American Journal of Essential Oils and Natural Products*, 2016; 4(4): 16-22; Can Baser K & Buchbauer G,* Handbook of Essential Oils: Science, Technology, and Applications*, CRC Press, Taylor & Francis Group, New York, 2010; Juergens U, "Anti-inflammatory properties of the monoterpene 1.8-cineole: current evidence for co-medication in inflammatory airway diseases,"* Drug Research*, 2014; 64(12): 638-646, doi: 10.1055/s-0034-1372609, Epub 2014 May 15; Liao Q, Qian Z, Liu R, An L, Chen X, "Germacrone inhibits early stages of influenza virus infection,"* Antiviral Research*, 2013; 100(3): 578-588, doi: 10.1016/j.antiviral.2013.09.021, Epub 2013 Oct 3.*

Preventing Damage from Conventional Cancer Treatment

Rice Bran Arabinoxylan Compound (RBAC), a cultured mushroom product made from shiitake and rice bran, increases the rate of survival and reduces the side effects of conventional cancer chemotherapy and radiation according to human clinical research studies. In a study of 50 breast-cancer patients, they were divided randomly into two groups. One group was given three grams daily of RBAC (also known as BRM-4, Biobran/MGN-3, Lentin, and AHCC) from one week before to one week after chemotherapy. The other group was given chemotherapy alone. After six cycles of chemotherapy, 80% of the RBAC group experienced good appetite and no fatigue compared to 12% in the control group; the RBAC group had no weight loss, whereas 84% of the control group lost five to ten kg. In the RBAC group, only 40% experienced nausea or vomiting compared to 100% in the control group. All of the patients in the control group lost their hair, but there was hair loss in only 28% of the RBAC group. A similar study compared the effects of RBAC to a placebo in a group of 65 advanced-stage head and neck cancer patients treated with radiochemotherapy. In the RBAC group, the red cell count and hematocrit were significantly higher as well as higher platelet, neutrophil, and lymphocyte counts. There were 17 blood transfusions needed in the placebo group, but only one in the RBAC group. Clinical outcomes appeared to be enhanced in the RBAC group. There were no deaths in the RBAC group and eleven in the placebo group. There were five cases of metastasis in the placebo group and none in the RBAC group. There were only two hospital admissions in the RBAC group but 21 in the placebo group. There was also significantly less weight loss in the RBAC group.

Masood A, Sheikh R, Anwer R, "Effect of "Biobran MGN-3" in reducing side effects of chemotherapy in breast cancer patients," The Professional Medical Journal, *2013; 20(1):013-016; Tan D & Flores J, "The Immunomodulating Effects of Arabinoxylan Rice Bran (Lentin) on Hematologic Profile, Nutritional Status and Quality of Life among Head and Neck Carcinoma Patients Undergoing Radiation Therapy: A Double Blind Randomized Controlled Trial,"* Radiology Journal*, 2020; Vol. 12: 11-15.*

Estrogenburgers

Preventing Damage from Conventional Cancer Treatment

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Estrogenburgers

Burger King's "Impossible Whopper" meatless hamburger may be less healthy than a regular Whopper. A veterinarian, Dr. James Stangle, writes that the red appearance of Impossible Burger patty comes from genetically splicing a soybean and yeast. The blood-like color and flavor in the Impossible Burger is derived from soy leghemoglobin produced by this genetically engineered yeast. Then, there are its effects on hormone balance. According to Dr. Stangle, "the impossible whopper has 44 mg of estrogen and the whopper has 2.5 ng of estrogen. That means an impossible whopper has 18 million times as much estrogen as a regular whopper." He explains that you would have to eat 880 pounds of beef to equal the amount of estrogen in one birth control pill, but considerably less with an Impossible Burger. Anxious couples may now be able to head to Burger King for a "morning-after" burger.

Dr. James Stangle, "Stangle: Impossible Burgers Are Made of What?" Tri-State Livestock News*, Dec 20, 2019, at* ***https://www.tsln.com/news/stangle-impossible-burgers-are-made-of-what/****.*

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Tagged With: 2020, Cancer, Dan Kenner Ph.d. lac, Dietary Supplements, Essential Oils for Viral Infection, Estrogenburgers, TCM